TIME ALLOCATION AND WELL-BEING OF UNIVERSITY TEACHERS IN V4 COUNTRIES DURING THE COVID-19 PANDEMIC

Editor: Miroslava Knapková

Authors: Miroslava Knapková, Anna Barwińska-Małajowicz, Tamás Mizik, Miriam Martinkovičová



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	Miriam Martinkovičová



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Editor Ing. Mgr., PhD. Miroslava Knapková, Matej Bel University in Banská Bystrica, Slovakia

Authors Ing. Mgr., PhD. Miroslava Knapková, Matej Bel University in Banská Bystrica, Slovakia; dr hab. Anna Barwińska-Małajowicz prof. UR, University of Rzeszów, Poland; dr Tamás Mizik, Corvinus University of Budapest, Hungary; doc.,PhDr., PhD. Miriam Martinkovičová, Matej Bel University in Banská Bystrica, Slovakia

Peer review dr hab. Tomasz Bernat prof. US, University of Szczecin; dr Maryla Bieniek-Majka, Institute of Law and Economics Kazimierz Wielki University in Bydgoszcz

> Cover design Kamil Dura

Typographic design, composition and breaking Mateusz Poradecki

Linguistic, stylistic and technical editing Monika Poradecka

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Wydawnictwo SIZ ul. Matejki 22/26, pok. 112 90-237 Łódź Tel. 42 635 47 91 email: biuro@wydawnictwo-siz.pl

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This scientific monography is a part of the project No. 22110433 "Does well-being matter? Higher education teachers during COVID–19 pandemic", which was co-financed by the Governments of Czechia, Hungary, Poland and Slovakia through Visegrad Grants from International Visegrad Fund. The mission of the fund is to advance ideas for sustainable regional cooperation in Central Europe.

Authors: Miroslava Knapková Anna Barwińska-Małajowicz Tamás Mizik Miriam Martinkovičová



Preface

Period of the COVID-19 pandemic is linked with various unexpected effects and consequences. One area that was significantly affected by the COVID-19 pandemic was higher education. Not only the necessity to adapt the teaching process from face-to-face to hybrid (a combination of face-to-face and online teaching) or fully online teaching, but also the changes in teachers' perceptions of their position, employer and state support and teachers' overall sense of well-being were greatly affected by the pandemic.

The monograph focuses on identifying, analysing, and comparing the time use and well-being of university teachers in the Visegrad Four countries. Based on the theoretical background and primary research conducted, it highlights the ongoing changes in the teaching process because of the COVID–19 pandemic, the increased time demands on the work of university teachers, and the significant impact of the pandemic on the overall well-being of university teachers. The aim of the monograph is to identify changes and trends in the perceptions of time use and well-being of university teachers during the COVID–19 pandemic, based on primary research (questionnaire-based data collection at universities in the V4), and to suggest ways of using the data for stakeholders.

The monograph is divided into six parts. The first part focuses on the theoretical background, and it describes topic of time allocation and well-being in general, as well as in linkage with the university teaching staff. The second part of the monograph is dedicated for describing possible methods of measuring time allocation and well-being, as well as for the justification for the choice of the chosen method for our research. The third part of the monograph focuses on the specifics of the work of university teachers under the conditions of COVID–19 pandemic. The fourth and fifth parts of the monograph focus on the selected results of the primary research. Firstly, the specifics of labour market of academia in V4 countries are described. Secondly, the results on time use, workload, work-life balance, and feelings during various activities of university teachers are presented. In the last part of the monograph, the possibilities of further usage of collected data and knowledge on time allocation and well-being of university teachers are summarised.

Based on the above we can conclude that the objectives of the monograph and objectives of the research project have been fulfilled. The presented research outcomes extend discussions on the issue of time allocation and well-being of university teachers in specific conditions of COVID–19 pandemic. Focus on the situation in V4 countries provides for a very valuable comparative study of time allocation and well-being of university teachers in the selected geographic region. We believe that the monograph



will raise interest not only among university teachers, but also among university management, decision makers and public. The monograph provides sound theoretical grounds for the presented topic and a very practical outcomes linked to time allocation and well-being of university teachers. It can also be expected that the presented findings will serve as a unique source of inspiration for further research in time allocation, well-being, academia teachers, and COVID–19 pandemic.

Ing. Mgr. Miroslava Knapková, PhD. Faculty of Economics Matej Bel University in Banská Bystrica Slovakia



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Authors

Miroslava Knapková, Ing. Mgr. PhD. is an associate professor at the Faculty of Economics, Matej Bel University in Banská Bystrica, Slovakia. Within her pedagogical and research activities, she focuses on the interactions between the law and economy, and economic and legal aspects of entrepreneurship, business companies, paid work and unpaid work, time allocation, well-being, heavy time investment, and work engagement.

Anna Barwińska-Małajowicz, PhD. is an associate professor at the University of Rzeszow, Institute of Economics and Finance, Department of Economics and International Economic Relations, Poland. She is s head of the Department of Economics and International Economic Relations at the Institute of Economics and Finance at the University of Rzeszow; a certified translator of the German language; holder of a Katholischer Akademischer Ausländer-Dienst scholarship at Humboldt University of Berlin, Trier University – institute for Labour Law and Industrial Relations in the European Union, as well as Bielefeld University. Her research interests focus on the problems of international labour flows, human capital, as well as entrepreneurship.

Tamás Mizik, Ph.D. is an associate professor at the Department of Agribusiness, Corvinus University of Budapest, Hungary. Related to his teaching activities, he wrote a university textbook chapter on employment with special attention paid to agricultural employment. He was a Fulbright scholar in the fall semester of the academic year of 2019/2020, thereby he gained insight into the US higher education system.

Miriam Martinkovičová, PhDr., PhD. is an associate professor at the Faculty of Economics, Matej Bel University in Banska Bystrica, Slovakia. She focuses to the issues of applied social sciences in the field of ethics, philosophy, and political sciences. Within her research activities, she devotes to the problems of professional ethics, to the professionalization of employees and social intelligence. In the current period she explores the social dimensions of unpaid work in households and variables well-being and multitasking within the European time-use survey. She has 20-year practice and experiences as a lecturer and trainer of soft skills (communication, sales, management) in private and public sector.



Introduction

Time, as a scarce resource, passes equally for everyone, but its use is highly differentiated. This is true for all components of the day - paid work, unpaid work, as well as leisure and other non-productive activities of an individual. Inappropriate use of time can have a negative impact on motivation, productivity, work atmosphere and workplace relationships, as well as on mental health, stress levels and thus on individuals' overall work and life satisfaction and well-being. The monograph examines the issue of time allocation and use of time of university teachers, both in theoretical and practical terms, in which it is based on the research carried out in universities in the V4 countries. The monograph does not examine the overall allocation of university teachers' time but focuses primarily on activities related to the performance of their paid work. In relation to time allocation, the monograph also examines the issue of well-being of university teachers by linking three domains, namely activity – time – feeling. The aim of the monograph is to identify changes and trends in the perceptions of time use and well-being of university teachers during the COVID-19 pandemic, based on primary research (questionnaire-based data collection at universities in the V4), and to suggest ways of using the data for stakeholders. The monograph is divided into six chapters. The first two chapters present the theoretical basis of the problem under study, focusing on the definition of time allocation, well-being, their specifics in the university setting, as well as approaches to survey and measure both time allocation and well-being. The third chapter focuses on previous research on time allocation and well-being of university teachers, as a basis for our primary research. The fourth and fifth chapters describe the methodology of the conducted primary research, the specifics of the labour market of university teachers in the V4 countries (Slovakia, Poland, and Hungary), background information on the research sample, as well as selected research results with a link to the allocation of time of university teachers and well-being of university teachers in the conditions of the COVID-19 pandemic.

The monograph represents the first comprehensive work in the conditions of the V4 countries that examines a specific group of people – university teachers. It establishes a theoretical and practical basis for further exploration of the issues of time allocation and well-being, which, given the ever-increasing demands placed on university teachers, will continue to be the focus of attention in the future.



1. Theoretical background of time allocation and well-being

The first chapter of the monograph is based on the so-far knowledge on the time allocation and its interconnection to well-being. Several European and international scientific and professional sources, research and studies have been used for the preparation of this part of the monograph. The chapter is divided into three subsections. In the first one, the meaning of time, various approaches to understand and to research the time and its allocation are described. In the second subsection, authors describe interconnection between the time allocation and well-being. The last subsection focuses on the results of selected so far research on time allocation and/or well-being of university teachers, in the global perspective.

1.1. Scientific reflection on time and its allocation

The category "time" is an interdisciplinary and relatively ambiguous concept. The phenomenon of time and its passage has been addressed by philosophers in the past (Aristotle viewed time as the number of movements of the sun relative to what has already happened or what is yet to happen; Immanuel Kant explored time together with space (Vích, 2008)), but it has also received due attention in the present (Gale, 2016; Krob, 2018). In physics, time is used in two senses. Time as a time interval, or the temporal distance between two events, represents one of the fundamental physical quantities, the basic unit of which is the second (Essen, 1968). Time as an instant of moment serves to organize various processes and events (Buzek, Čermak, 1980). In sociology, the concept of time appears by Durkheim (1960), who defines time as a collective phenomenon, a product of collective consciousness. All members of a society share a common consciousness of time; therefore, time is a product of society. The authors Hassard et al. (2016) in The sociology of time, suggested that time in social interactions should be seen as a resource but also as a social value. Time as a resource represents a fixed variable that cannot be reclaimed once it has been consumed. Time as a social value represents the means through which we coordinate and reproduce everyday activities, through which special moments and occasions acquire specific meanings. As a scarce, limited resource, time plays an important role in individuals' decisions about how to spend their time and their lifestyles. Strazdins and colleagues (2016) consider time as one of the resources that is essential for maintaining healthy lifestyles, appropriate social interactions, and achieving public health goals.



Time, as a scarce (i.e. precious) resource, is mostly associated with utility in economic theories. Therefore, individuals' decisions about time allocation, i.e., thinking about which activities to engage in and the time scales to which they will and will not engage in, should have a rational basis. Optimal time allocation allows an individual to either maximize the accumulation of resources or minimize the time devoted to the accumulation of resources (Hames, 1992). According to Venn and Strazdins (2017), the basis of rational decisions is money. Money, like time, is a scarce resource for individuals and households. Individuals with poor health, low education and low skills are at risk of income deprivation. They are unable to secure well-paid work and low income further reinforces their powerlessness, exclusion from society and feelings of inferiority. Time, like money, is limited, but unlike money, everyone has an equally long day (24 hours). Allocation of time based on money (in its case expressed as savings in the form of discounts) has also been addressed by Monga, May, and Bagchi (2017). They found that individuals (consumers) are willing to allocate more time to shopping (including standing in queues for longer) if it is expected to bring them monetary savings. Becker (1965; 1976) and subsequently co-authors Becker and Becker (2009) applied economic theory to develop a model of time allocation across all domains of people's lives, including paid work, productive activities within the household, and leisure activities. In their time allocation models, Becker considers individuals as rational actors whose goal is to maximize their utility (satisfaction). Irrationality in time allocation, on the other hand, has been pointed out by Soman (2001). He dealt with the impact of past time allocation decisions on individuals' present situation and welfare. Using three case studies, he confirmed that the effect of past costs is not observed when past decisions are expressed only through time allocation. However, the past cost effect is evident if time allocation decisions are expressed in monetary terms. Soman pointed out that although time is a scarce resource, individuals lack the ability to make rational decisions when making time allocation decisions, as is the case with rational economic decisions (Sidrauski, 1967; Barro, 1976; Lucas, Sargent, 1981). In his study, Hames (1992) pointed out that time allocation models are based on a fundamental economic assumption, namely that time and other resources are limited and have alternative uses. Through the process of selecting among alternative resources and their alternative uses, certain patterns of behaviour are established in society. Therefore, the allocation of time has a specific and consistent character from country to country, or even at local level, which is linked to local customs, the economic environment, legislation, and the characteristics of the population.

In addition to the desire to maximize monetary income, individuals' time allocation decisions are associated with the need to provide for basic needs such as food (Redman, 1980; Berio, 1984) or health (Bird, Fremont, 1991; Podor, Halliday, 2012), but also with the male-female division of labour (García-Mainar, Molina, Montuenga, 2011;



Bianchi et al., 2014), work-life balance (Grawitch, Barber, Justice, 2010; Delecta, 2011) and the functioning of the household as a whole (Pezzin, Schone, 1997; Ettema, van der Lippe, 2009). Summary of time allocation approaches is displayed in the Table 1.

Time allocation and its meaning	Author/s
Optimalisation – to maximize resource accumulation, or minimize the time	Hames, 1992
devoted to resource accumulation	
Time and money are limited resources; however, time is limited equally	Venn and Strazdins, 2017
for everyone	
Time allocation based on money	Monga et al., 2017
(expressed as savings in the form of discounts)	
Maximising utility (satisfaction)	Becker, 1965, 1976; Becker, Becker, 2009
The time allocation is specific and consistent from country to country, or	Hames, 1992
at local level	

Table 1. Approaches and meaning of time allocation in theory and practice

Source: own processing.

1.2. Time allocation and well-being

The current growing interest in the issues of quality of life, happiness and satisfaction has undergone an interesting and contradictory development, especially regarding the search for appropriate indicators and ways of measuring them. The complexity of the issue is evidenced by the shift in theoretical reflection, especially in the field of economic science, from neoclassical welfare economics (Edgeworth, Marshall, Pigou), which focused mainly on individual utility and thus subjective well-being of the individual, through the so-called "welfare of the individual", to the so-called "well-being of the individual", which is the main focus of theoretical reflection in economic science. The new welfare economics (Pareto, Hicks, Hotelling, Kaldor), which advocated the value and normative neutrality of economic theory and sought to bring scientific positivism with an emphasis on efficiency to the emergence of the economics of happiness (Easterlin, Frey, Stutzer, Kahneman, Diener, Veenhoven), which implicitly works with the concepts of happiness, satisfaction, quality of life, well-being, the good life. At the same time, it assumes that economic activity, the production of goods and services, is certainly not an end, but only has value if it contributes to human happiness (Stutzer, Frey, 2007).

Research on quality of life initially (1960s–1970s) focused on examining economic and social indicators of well-being, such as income and material status, political freedom and independence, social justice, legal security, and health care (Džuka, 2004). Later,



attention has focused on subjective indicators of quality of life, especially those related to the individual and his or her health. The World Health Organization (WHO) defines quality of life as an individual's self-perceived life situation in the context of a specific culture and dominant value system in relation to one's own aspirations, expectations, and interests. Such a concept of quality of life is influenced by several indicators such as physical health, mental state, degree of independence, social relationships, or environmental quality (The WHOQOL-Group, 1994).

Gradually, research on quality of life has become increasingly individualised and now focuses on subjective perception and evaluation of one's own life. In this context, the theoretical and empirical notion of well-being has become very ambiguous, which naturally gives rise to the emergence and use of ambiguous terminology. In addition to the term 'quality of life', there are many similar terms that are often used synonymously, although they are not well defined. These are concepts such as 'social well-being', 'subjective well-being', 'personal well-being', 'human development', 'standard of living', 'happiness', 'wealth' or 'satisfaction'. Hereafter in the monograph, we will use the comprehensive term well-being, or subjective well-being (hereafter SWB).



Figure 1. Simple model of subjective well-being Source: OECD, 2013.

The concept of "quality of life" has been studied in the context of social sciences and medicine whereas the "well-being" is an original psychological construct. There are at least three different approaches to measurement of well-being construct (Figure 1). They capture its different aspects: life evaluation or life satisfaction, hedonic well-being, and eudemonic well-being (Steptoe, Deaton, Stone, 2014).

Life satisfaction refers to people's thoughts about the quality of their life, their overall satisfaction with life, or their satisfaction with particular areas of life (health, family, work). Life satisfaction surveys often use tools such as the Cantril Ladder. Individuals are asked to indicate the position on an 11-point scale (ladder) that most closely reflects



their realistic assessment of their own life, with 'worst possible life' being the lowest rank and 'best possible life' the highest rank. The hedonic dimension of the SWB refers to everyday feelings or moods, such as experiencing happiness (not evaluation), sadness, anger, or stress, and is measured by having respondents indicate their experience of particular emotional states such as happy, sad, or angry. Finally, the third, eudemonic aspect reflects general judgments about the meaning and purpose of life. It is a reflection on the overall meaningfulness of life, the fulfilment and satisfaction or disappointment of (not) achieving life plans and goals. An important distinguishing criterion between these SWB dimensions is the level of cognitive processing required: feelings can be described relatively directly, whereas life evaluation and questions about life meaningfulness are likely to require deeper reflection, including a past-present-future time sequence and comparison with the standards against which individuals evaluate their lives (e.g., my life compared to what, when, or with whom).

One of the possibilities to measure SWB is the TUS (Time Use Survey) methodology. TUS surveys aim to find out how much time people spend on different activities, including paid work, household and family care, personal care, volunteering, social life, travel and leisure activities. In 1972, TUS results were for the first time incorporated as an indicator of well-being in the Gross National Happiness Project in Bhutan (Galay, 2007). In Western countries, a pioneer was Sandor Szalai, who led the UNE-SCO Budget Research Project, the first transnational project to utilize TUS to harmonize data collection methods (Szalai, 1972). This project established a data collection scheme that is still used in almost every TUS survey. From 1990 to 2013, the TUS was conducted in 69 countries worldwide. In 1998, there was a call for the development of recommendations for Harmonized European Time Surveys (HETUS). The aim was to ensure that European countries would be able to conduct surveys that would allow comparison across Europe. The project has since been carried out based on a gentlemen's agreement between Eurostat and the European countries participating in the HETUS programme. The main survey instruments are a household questionnaire and a questionnaire for individuals, which correspond in nature to the measurement of cognitive SWB. They are based on the assessment of satisfaction with life as a whole or by individual life domains (health, family, work, income, housing, etc.). Another instrument is a diary using time data in which respondents are asked to record their daily activities. This makes it possible to track, in parallel with time, the feelings experienced in the time interval during which the activity takes place, thus measuring the affective component of SWB in real time. The TUS (or HETUS) methodology thus allows to measure both cognitive and affective components of SWB by linking three variables: time-activity-feeling.



1.3. Time allocation and well-being of university teachers

Focus on time allocation and/or well-being of teachers (not university teachers, but teachers in general) is not a completely issue. Already at the end of the 20th century, researchers paid attention to allocation of teachers' time (Stark, Lowther, Austin, 1985; Brown, Saks, 1987). However, most of the studies have been focusing on the time allocation of pupils or students, not on the teachers. Eventually, time allocation of teachers is considered only as an addition to the research of students' time allocation and well-being. It is evident also in the academia sector.

One of the first comprehensive results of the research on time allocation of higher education (eventually university) teachers was published in 2000 (Milem, Berger, Dey, 2000). By using the data from three surveys conducted in 1972, 1989 and 1992 in America. As time dedicated for teaching, they combine time spent for preparing for teaching and time spent by teaching itself. Beside teaching, they focused also on time spent on research and scholarly writing, and time spent for advising and counselling students. Their results showed that faculties (not only at research universities, but also in doctoral universities, and comprehensive institutions) reported significant increase in the time spent engaged in research. On the other hand, faculties also reported significant increase in the amount of time allocating to preparation for teaching and teaching itself. Authors were also interested in finding out from what aspect of the job of higher education teachers are taking the added time for research and teaching. Authors concluded that at least some time had been taken from time spent for advising and consulting students. In their analysis, the authors limit their analysis to the time devoted to performing work directly in the faculty setting and do not address the possibility that teachers devote more time to research and teaching at the expense of their personal time (caring for household and family members and leisure time).

In the later research, some authors focused particularly on time allocation of teachers in research universities. For example, Link, Swann, and Bozeman (2008) focused on how college and university faculty members allocate their time among teaching, research, and service responsibilities, with the specific focus on research universities. In their study, they combined four groups of activities, namely research, grant writing, teaching, and service. They found out that full professors at research universities spent increasing time on service at the expense of teaching and research while longer-term associate professors who have not been promoted to full professor spent significantly more time teaching at the expense of research time. They also found that women, on average, allocate more hours to university service and less time to research than do men. In the analysed faculties, the teachers spent in average 54 hours per week by



academic activities, from which 36% of time was dedicated to research, 32% of time was dedicated to teaching and less than 10% of time was dedicated to grant writing.

Houston, Meyer, and Paewai (2006) conducted research in a public university in New Zealand, focusing on the teachers' workload, time allocation to teaching and research, and satisfaction with work environment. The research was conducted in three subsequent years, to identify also trends and changes in the time. Their results indicate that about 40% of teachers worked more than 10 hours beyond full-time. The most time expanding areas were identified as compliance requirements and information requests; administrative duties associated with the introduction of new systems and changes to University policies; increasing numbers of programme and paper offerings; increased workload resulting from the variety of delivery modes supported by the University; and increasing demand for a longer teaching year (such as an offer of summer school).

Focusing on the gendered approach, Winslow (2010) used data from 1999 National Study of Postsecondary Faculty in America to analyse the time allocation of faculty teachers to teaching and research, and to identify preferred and actual time allocation. She found out that women faculty members prefer to spend a greater percentage of their time on teaching (52% of their workweek), while men prefer to spend more time on research (51.4% of their workweek). She also confirmed that women faculty members spend a greater percentage of their workweek on teaching and a smaller percentage on research than men, and that their actual time allocations to both teaching and research diverge more from their preferred time allocations than those of men.

Research on time allocation of university teachers has shifted in the last decade from examining the amount of time devoted to teaching and research, to examining time allocation in relation to work-life balance, well-being, increasing stress and workload of teachers.

Franco-Santos et al. (2017) examined 1017 university teachers from 141 universities in the United Kingdom. They intended to analyse the well-being of academia teachers in association with the various governance practices. Their findings suggest that governance and well-being experiences of academic leaders are more closely aligned with those of professional service leaders than with those of academics without leadership positions. Young et al. (2017) focused on various challenges experienced by academia teachers, which are partly or completely interlinked with well-being. They pointed to workload, and tenure and promotion processes as the most relevant challenges of contemporary higher education. Using the qualitative approach (reviewing thirteen women – university teachers) they summed up that to maintain well-being of university teachers it is necessary 1) to recognize that teacher's work is important, to engage in work and leisure activities, to maintain relationships, to refrain from comparison, and to take time to reflect and enjoy nature and wildlife (recommendations for teachers), 2) to provide clear promotion and tenure processes, to examine



workload expectations, and to provide access to mentorship programs (recommendations for universities). Badri (2019) examined 307 academia teachers to find out their well-being, in the connection to their work-life balance. Within the research, author examined work-to-family conflict, work-family enrichment, job satisfaction, mental health, and turnover intention of the teachers. His results pointed that poor work-life balance was connected to poor condition of mental health, lower job satisfaction and higher turnover intention. In contrary, great work-life balance was linked with good mental health condition, higher job satisfaction and lower turnover intention.

Last two years of the studies focusing on higher education teachers and their well-being and linked mostly with the occurrence and effects of the COVID–19 pandemic. More detailed insights into the research of academia teachers and their well-being are included in the sub-chapter 3.4.



2. Possibilities of measuring time allocation and well-being

Not only time, its allocation and interconnection to well-being, but also methods of their measurements and evaluations are important. The second chapter of the monograph describes approaches, advantages, and methodological challenges of various methods of time allocation and well-being measurements.

2.1. Methods of detecting and measuring time allocation

The division of time into paid work, unpaid work, and non-productive activities (of which leisure activities are specific) results from the daily responsibilities of individuals and entire households, from labour market requirements (e.g., statutory maximum weekly working hours or employer-specified weekly working hours), as well as from established stereotypes and practices in the household and in the state. To examine the relationships, factors and dependencies related to time allocation, it is not sufficient to simply divide the day into productive activities (paid work and unpaid work) and non-productive activities (leisure and other non-productive activities), but it is also necessary to identify and measure the time that individuals (or entire households) spend on each activity.

Different methods exist for surveying and measuring the distribution and use of time by households and individuals. Economists measure the efficiency of time use (working day snapshot), sociologists prefer time diaries (filled in by the respondents themselves), anthropologists mainly use the method of observation. However, in terms of the nature and accuracy of the data collected, most research leans towards the time diary method of data collection. In 1972, a team of researchers published a study on the use of time during the day in twelve countries-Belgium, Bulgaria, Czechoslovakia, the Federal Republic of Germany, France, the German Democratic Republic, Hungary, Peru, Poland, the United States, the USSR, and Yugoslavia. Their study was based on time allocation analysis, where time allocation was a "block" of time (i.e., total hours and minutes) that represented the average daily time spent on each activity. The sum of all blocks of time adds up to 24 hours or 1440 minutes per day (Szalai, 1972).

In their study, Robinson and Godbey (1997) reported that to make accurate measurements of time spent on various activities, controlled data collection using a diary (i.e., not a diary filled out directly by the respondent, but by a trained interviewer who accurately instructs the respondent) is necessary. Recording the time of each activity



in a time diary eliminates the problems associated with time estimation and prevents respondents from purposely distorting the time spent on each activity. Bittman and Wajcman (2000) confirmed that individually styled questions generate less accurate results than a full diary. In his study, Bonke (2005) compared information obtained from a diary with information from a questionnaire that included questions about time spent in paid and unpaid work. He confirmed that studies of time use based on questionnaire information are less accurate than studies based on diary information. Budlender (2010) focused on the relationship between time use and one component of unpaid work, caregiving. The study included eight countries (Argentina, Nicaragua, India, Japan, Republic of Korea, South Africa, Tanzania, and Switzerland), and in each country the researchers analyzed official Time Use Survey (TUS) data. In five countries, they used a time diary method to survey time allocation and use, and in 3 countries they used an inquiry method using stylized questionnaire questions (questions related to specific activities).

One method of collecting data on time allocation using a diary is the Time Use Survey (TUS). A time use survey is a statistical survey that aims to report data on how people spend their time (Time Use Survey, n.d.). Official time use surveys are used in many countries. Sixty-nine countries around the world conducted a time use survey from 1990 to 2013 (European Communities, 2009). TUS surveys have been conducted in Australia (in 1992, 1997, 2006), Finland (every ten years) since 1979), France (in 1966, 1974/1975, 1985/1986, 1998/1999 and 2009/2009), Greece (in 2013/2014), Germany (in 1991/1992, 2001/2002 and in 2012/2013), New Zealand (in 1998/1999 and 2009/2010), Poland (in 1968, 1976, 1984, 2003/2004 and 2013), Austria (in 1981, 1992 and 2008/2009), Italy (in 2002/2003, 2008/2009 and 2013/2014), Spain (in 2002/2003 and 2009/2010), Sweden (in 1990/1991, 2010/2011 and in 2010/2011) and the United Kingdom (in 2000/2001 and 2014/2015) (Time Use Survey, n.d.). The Harmonised European Time Use Survey (HETUS) has been used in fifteen European countries since 2000.

Since 2008, HETUS has used the Activity Coding List 2008 (*Activity coding list...*, 2008) to code the activities performed during the day. The ACL2008 coding list distinguishes 9 basic categories of activities, which are further subdivided into subcategories. The main activities and the main subcategories of activities performed during the day are listed in Table 2.

Households, as defined by economic theory (Mankiw, 1999; Lisý et al., 2011; Samuelson, Nordhaus, 2013), make many decisions every day. These are economic decisions at a specific time and in a specific territory. One of the most important factors in their decision making is time. Processing data from TUS and HETUS (Bittman, Wajcman, 2000; Sayer, 2005; Nässén, Larsson, 2015), as well as in terms of the ACL2008 classification itself, activities during the day can be divided into 4 main groups, namely paid work, unpaid work, personal care, and leisure.



Activity categories		Main subcategories	
Code	Activity	Code	Activity
0	Personal care	01	Sleeping
		02	Eating
		03	Other personal care
1	Employment (paid work)	11	Main and side work
		12	Activities related to employment
2	Study	20	Unspecified study
		21	School or university
			Free time study
3	Household and family care	30	Unspecified household and family care
		31	Food management
		32	Household care
		33	Production and maintenance of textiles
		34	Gardening and pet care
		35	Reconstruction and repairs
		36	Shopping and services
		37	Household management
		38	Care of children
		39	Adults care
4	Volunteering and socialisation	41	Organised volunteering
		42	Informal assistance to other households
		43	Participation in meetings
5	Social life and entertainment	51	Social life
		52	Entertainment and culture
		53	Relaxation – outdoor stay
6	Sport and outdoor activities	61	Physical training
		62	Productive Exercise
		63	Sport-related activities
7	Hobbies and computers	71	Arts and hobbies
		72	Computer activities
		73	Games
8	Mass Media		Reading
		82	Television, video and DVD
		83	Radio and recording
9	Travel and non-specific use of time	91	Targeted travelling

Table 2. Activity categorisation and main subcategories according to ACL2008

Source: own processing based on Eurostat (n.d.). *RAMON...*.

Most economists focus on paid work in relation to the labour market (Layard et al., 2005; Helpman, Itskhoki, 2010), its modern manifestations (Deakin, Wilkinson,



2005; Bonoli, 2017), flexibilization (Beatson, 1995; Hill et al., 2001), and pay for work (Guthrie, 2007). Paid work is understood in a narrower sense as dependent work performed by an employee for an employer, as paid employment (England, McCreary, 1987). In a broader sense, paid work encompasses any activity of a person that passes through the market for which the person receives remuneration in money or expressible in money (Cartwright, Holmes, 2006; Guthrie, 2007; Thompson, Smith, 2010). In this sense, paid work includes, in addition to dependent work (including all types of employment relationships such as part-time work, full-time work, fixed-term contracts, permanent contracts, homeworking, teleworking), independent work, i.e. self-employment, work performed under commercial contracts (e.g. commission contract, mandate contract, management contract, executive contract) and work performed under civil contracts (e.g. agency contract) (Knapková, 2017). In a broader sense, paid work is also understood in time allocation research. According to the HETUS guidelines (European Communities, 2009), paid work encompasses any form of work for which an individual receives an income, including work in family businesses, work performed for an employer in a domestic setting, self-employment (i.e. self-employed), farming (self-employed farmers), freelancing, paid internships for students and apprentices.

The counterpart of paid work is unpaid work. Unpaid work, like paid work, is a purposeful activity that has a meaning and an outcome. It is often regarded as something natural that has existed since time immemorial and that traditionally belongs to the typical running and reproduction of every household (Uramová, Tuschlová, Nedelová, 2014). People perform unpaid work every day in their households and many times do not think about how much time they spend on unpaid activities, why they perform these activities and whether unpaid work can be replaced by paid services offered by the market. There are many studies and research papers on unpaid work abroad (e.g. Antonopoulos, Hirway, 2009; Miranda, 2011). These studies confirm that there are significant differences in the extent, motives, and trends of unpaid work across countries.

Považanová (2020) distinguishes between the activities a person performs during the day for work (i.e. production activities, which include paid work and unpaid work) and non-work (i.e. non-production activities). Hirway (2000) includes among production activities: employment, i.e. work done for enterprises; household activities (work done for the household, not for the enterprise); provision of services for pay and other production of goods (not for enterprises); maintenance, administration and shopping for one's own household; caring for children, the sick, the elderly and the disabled for one's own household; community services; and assistance to other households. This understanding of production activities corresponds to the previously mentioned definition of paid and unpaid work. Hirway (2000) considers study, social and cultural activities, use of mass media, and personal care to be non-productive activities. Stuart (2014) adds that the outcome of non-productive activities belongs only to the one



who performs them. He divides non-productive activities into two groups, namely personal care (includes eating, sleeping, taking care of one's own health, dressing, and grooming) and personal recreation (includes socializing, reading, watching television, going to the cinema, listening to music, playing sports, and relaxing). Such a definition of non-productive activities corresponds to leisure and personal care according to Bittman and Wajcman (2000), Nässén and Larsson (2004), Sayer (2005) and ACL2008 classifications.

One category of non-productive activities carried out during the day is leisure or leisure-time activities. The definition of leisure is not straightforward. Bittman and Wajcman (2000) point out that economic theories define leisure as the opposite of working time, that is, as time that is available to the individual, as purely personal, private time. Hobfoll (2004) considers leisure as a means to recover resources that have been exhausted during work (i.e. resources inherent to each individual, i.e. individual conditions, personal characteristics and energies that have a special meaning for the individual). The authors McHale, Crouter, and Tucker (2001) consider leisure activities to be primarily hobbies, sports, games, outdoor activities, reading, watching television, and time spent with friends.

Personal care activities represent another category of non-productive activities and include mainly sleeping (Biddle, Hamermesh, 1990; Tucker et al., 2008), eating and personal hygiene. Of these activities, individuals devote the most time to sleep. Sleep is critical for recovery of bodily functions and likely plays a primary role in the relationship between psychological exhaustion from paid work and recovery (Tucker et al., 2008). Biddle and Hamermesh (1990) found that wage level is an important determinant of sleep, because it affects labour market productivity. Their study shows that higher wages reduce men's sleep time, while increasing waking time during non-market (unpaid) activities.

In the following sections of the monograph, we will focus on the allocation of employees' time, and within the allocation of time, we focus only on paid work, that is, those activities that individuals perform for their employer (regardless of whether they perform the activities at the workplace or at home, during the time defined by the employer in the employment contract, or during the time that is prioritized for rest or unpaid work).



2.2. Well-being and possibilities of its measurement

In this part of the text, we focus on the specific scientific research of subjective well-being and possible research instruments to use to measure the well-being.

The Stiglitz-Sen-Fitoussi Commission has identified subjective well-being (WB) as a key element of quality of life for national statistical offices to report on. Questions dealing with life evaluations, hedonic experiences and priorities thus should be part of the surveys as it has been proved that it is possible to collect valid data on both subjective and objective well-being (Stiglitz, Sen, Fitoussi, 2009). The text examines the possibilities of detecting and measuring both dimensions of well-being, cognitive and affective. It evaluates international and domestic knowledge, concepts, methods, and results of research in this field. Also summarizes the most widely used methods for measuring well-being.

2.2.1. Approaches to measuring well-being

The problem with measurement of WB is most visible when measuring the quality of life using one question, such as: "If you reflect upon your life and personal situation, how satisfied are you with your life as a whole?" (Cummins et al., 2003, p. 162). This global assessment is so global that it is impossible to identify the respective share of emotional evaluation and cognitive judgement in it, and above all, it is not possible to determine, what part of life reality a person reflected upon at the moment of responding to this question. Such measurement is loaded with another undesirable characteristic – it is strongly determined by the current emotional state of the respondent: how a person feels at the moment considerably determines their response to the question of overall satisfaction.

While the concept of quality of life has been developed in the context of social sciences and medicine, the subjective wellbeing is originally a psychological concept. Diener (1984; 2000) is the author of the most preferred theory of subjective wellbeing, in which the subjective wellbeing consists of two components:

- emotional and affective component hedonistic orientation,
- cognitive evaluation component eudamonistic, wider social orientation.

The emotional component can be divided into two partial components – positive and negative affect. Cognitive evaluation component includes global (general) life satisfaction and satisfaction with various specific areas of life. For explanation of the emotional component and as a theoretical background for its measurement we use circumplex model of affective reactions (Watson, Clark, Tellegen, 1988) that can be reduced to two independent dimensions: positive and negative affect. When



measured, the positive affect is represented by positive adjectives (for example joyful, active...), and the negative affect is represented by negative adjectives (fearful, angry). In case of emotional subjective wellbeing the question is how often (not how much) persons feel these affective reactions.

The multidimensionality of well-being can be studied in different ways, most often by using indexes and empirical surveys using questionnaires. Some of index approaches represent synthetic indicators relating to overall well-being situation, others relate to subjective level only. The most famous of them are Human Development Index (HDI), introduced by the United Nations Development Programme (UNDP), OECD Your Better Life index or Happy Planet Index (HPI), which was introduced by the New Economics Foundation.

As for the measuring the subjective well-being through the extensive empirical studies, there are significant differences among them resulting from the following factors:

- scale of the study (international, national, local),
- the frequency of data collection (regular, irregular, one-time surveys),
- form of survey (questionnaires, separate modules, question sets, diaries),
- ways of data collection (eudaimonic, evaluative, affective),
- timeliness of collected data (feel-based, real time),
- technical support (printed records, telephone, sms, website, on-line questionnaires).

The measurement of well-being is often viewed from the subjective point of view and measured by an individual's response to a survey question like, "All things considered, how satisfied are you with your life as a whole these days?". The questions on subjective well-being usually use the scale from 4 to 11 points. This type of research is represented by the European Values Study (EVS), European Quality of Life Survey (EQLS), European Social Survey (ESS), Eurbarometer and Time Use Survey (TUS).

It is the last type, the TUS, that is considered to be the most valuable. In 1972, it was the first time it was incorporated as an indicator of well-being into the Gross National Happiness Project of the kingdom of Bhutan (Galay, 2007). This type of research uses the questionnaire survey (a questionnaire for the household and questionnaire for an individual) that represents so called cognitive measuring of well-being. This is based on assessing the life satisfaction either with the life as a whole or by individual life areas (health, family, work, income, housing, etc.). The second form of the research is a diary. This enables monitoring the concurrent feelings felt while doing specific activities in the time interval during which the activity takes place.

The types of research that connect three basic variables, time – activity – feeling, use the following methods:

- Systematic analyses of the relationships between time use and well-being by economists were initiated by Thomas Juster, who used time diary data to assess levels of subjective well-being (Juster, Courant, Dow, 1981). In Juster's opinion,



a summation of enjoyment ratings (process benefits) associated with activities performed during a specified period of time provides a more realistic valuation of subjective well-being than general questions about life satisfaction or perceived happiness based on past recollections. Researchers proposed to calculate process well-being benefits (PWB) as a weighted index of the duration of activities and their level of enjoyment.

- In the 2000s, interest in using time use data for the assessment of subjective well-being was revived by Kahneman and Krueger (2006). Kahneman and Krueger's day reconstruction method (DRM) used 'experienced utility' valuations of time diary episodes to assess respondents' well-being. It was more process sensitive and accurate than Juster's PWB but shared with the latter the assumption that subjective well-being can be calculated as a multiple of activities' duration and their enjoyment ratings (Zuzanek, Zuzanek, 2015).
- The truly concurrent valuation of well-being connotations of daily activities was made possible by ESM surveys, where respondents were asked to record their feelings about what they were doing at the very moment when they were signalled by the pager. It is, generally, accepted that Experience sampling methods "are the gold standard for assessing people's affective experience. They can capture the experience in actual moment, while the person has access to current feeling, and hence minimize problems of recall and inference" (Schwarz, Kahneman, Xu, 2009, p. 6).
- Another option is single question which is also intended to be used as part of a time-use diary and is the so-called column of luck. This question should generally not be used in conjunction with the DRM, as it is a substitute, and should be completed by the respondent for all time-use diary activities. In the 2010 French time-use survey, the French national statistical office, added the intensity of emotional experience as a separate column in the time diary, asking the respondent to record "was that moment pleasant or unpleasant" on a scale from minus 3 (unpleasant) to plus 3 (pleasant).
- The last method used for assessing well-being also uses the diary logs of the respondents. It can be classified as an effective way of establishing the well-being (hedonic orientation). At the end of the diary day, the respondent is asked to choose an activity at which he experienced the most positive or most negative emotions. This method monitors only extreme emotional states as part of the well-being.



2.2.2. Time diary and well-being measurement

One of the most use methodologies of the time-use measurement is time diary. Time-use diaries, maintained continuously throughout a specified period, usually of 24 hours, sometimes of two, five or seven days. There is now a substantial record of development and collection of representative national, annual, time-use diary samples, by both academic researchers and national statistical institutes.

The special diaries designed for time-use studies involve the continuous registration of an individual's sequence of activities throughout a defined observation period. Within this general description is a wide range of possible specifications. The approach to survey administration itself depends in part on the answers to specific issues of instrument design:

- Does it cover the whole working day or paid work only?
- Does the diary rely on own words or on pre-coded responses?
- Does the diary use variable observation intervals (based on the start and finish times of episodes of activity), or fixed intervals?
- Does the diary have single or multiple activity registration fields? And are these hierarchical or parallel? The norm is to invite respondents to designate simultaneous activities as "primary" or "secondary".
- Does the diary have additional "objective" fields registering location, co-presence, and purpose?
- Does the diary have additional "subjective" or "affect" fields registering enjoyment, stress, rushed feelings etc?

2.2.3. Measuring positive and negative emotions (affect)

Time-use surveys are one of the primary vehicles for collecting information on subjective well-being. Measures of overall happiness and life satisfaction generally capture the evaluative component of subjective well-being. Such questions are a valuable addition to time-use surveys but have much wider applicability. The OECD has published a set of Guidelines on the measurement of subjective Well-being (OECD, 2013) that address how and where such questions should be collected. While measures of life satisfaction are useful to include in a time-use survey as part of the array of analytical variables, the most important output for measuring well-being is information on positive and negative emotions (affect).

A common approach to collecting information on respondent's subjective attitude to different activities in time-use surveys has been to ask questions on the "most/least" preferred activity at the end of a questionnaire. While these questions may be useful for some specific purposes, they capture a different sort of information to questions



on positive and negative emotions in that they focus only on the activities provoking the most extreme responses. They lack information on intensity of feeling, and they require a cognitive judgement by the respondent that may result in responses that are different from those collected by questions focusing more specifically on emotional state.

Broadly speaking, there are two approaches to measuring positive and negative emotions (affect) in time-use surveys. Both make use of time-use diaries to link particular emotional states to specific activities, which allows for analysis that is not possible with more general survey questions.

The first approach is asking enjoyment questions as a field in the time use diary. For the collection of positive and negative emotions, the respondent's emotional state needs to be collected alongside the event to which they relate and at the same time as the recording of the event rather than in a separate questionnaire where the respondent is required to recall their feelings. This approach dates back to the early 1980s. William Michelson collected a number of time use studies in the city of Toronto, Canada, and Andrew Harvey collected a number of time use studies in Halifax, Canada, where the diary included the fields: main activity; secondary activity; location/mode of transport; who were you with; how much did you enjoy this activity; and how stressed did you feel during this activity. In 1985, John Robinson and a wider USA team collected a random digit dialling national sample survey in the USA that included a field asking people how happy they were during each activity. Also, in the mid–1980s, Jonathan Gershuny was involved with a national quota sample survey conducted by Unilever in the UK which also asked an enjoyment field in the diary. One of the most recent such surveys is the French time use survey 2010.

Intensity of emotional experience has been added as a separate column in the time diary which asks the respondent to record "was that moment pleasant or unpleasant" on a scale from minus 3 (unpleasant) to plus 3 (pleasant). The scale was presented visually rather than allowing respondents to write down their own interpretation. Sequencing may also be important in analysing the positive or negative emotions attached to a particular event of an activity. Emotions attached to an event may impact on the emotional response to following events or activities; or indeed following events may occur to change the emotional state caused or associated with the previous activity.

A second (alternative) approach to asking respondents to report the overall positive/ negative feelings about an activity on a single scale is to ask many questions on different emotional states about each activity. To manage issues of respondent burden, this is usually limited to a small number of randomly selected activities. For example, the United States Bureau of Labor Statistics asked respondents in the American Time Use Survey (2010) to record their emotions in three randomly selected activities. Respondents were asked about the intensity of six emotions using a 0–6 scale: stressed, tired, happy, sad, interested, painful.



Information collected in this way is much richer with respect to each activity than a single scale, but at the cost of collecting information on only a sample of activities. In analysing data of this sort, an episode can be considered as unpleasant if the respondent reported stronger negative emotions than positive emotions. An "unpleasantness index" of an activity can then be obtained as the percentage of time spent doing that activity categorized as unpleasant. This allows for the respondent to have different "feelings" for separate episodes of the same event.

The research using well-being questions seeks to promote greater well-being, and also to reduce harm and suffering. Negative daily experiences are associated with negative overall outlook, but negative experiences have separate drivers and mitigators. Activity level affect data inform understanding of what factors in the day make some experiences particularly unpleasant for certain groups of people and how we can alter circumstances of daily experience to reduce the negativity of these experiences.


3. Time allocation and Well-being research during Covid–19 pandemic

COVID–19 pandemic is not only linked with health issues of world population (Douglas et al., 2020; Tandon, 2020; Weerahandi et al., 2021), but also with crisis in various areas aspects of the word, however, mostly with the economic crisis. Economic crisis associated with COVID–19 includes, but is not limited to crisis/decline in tourism (Jones, Comfort, 2020; Radic et al., 2020), negative effects on consumption (Martin et al., 2020; Piyapromdee, Spittal, 2020), households 'income and wealth reduction (Hanspal, Weber, Wohlfart, 2020; Zabai, 2020), decrease of global and international trade, linked also with growing economic nationalism and protectionism (Gruszczynski, 2020; Jackson et al., 2020; Vidya, Prabheesh, 2020; Albertoni, Wise, 2021), entrepreneurial uncertainty (Brown, Rocha, 2020; Cowling, Brown, Rocha, 2020) leading to bankruptcies (Banerjee, Kharroubi, Lewrick, 2020; Wang et al., 2020). Most of these negative effects of COVID–19 pandemic are, in various aspects, linked with employment, labour markets and relations between the employers and employees.

One of the areas influenced by the COVID–19 pandemic is also personal perception of various aspects, that we can summon under the subjective well-being. Linking to the possible methods of subjective well-being measurement, strengthening the interconnection of time – activity – feelings, we focus on the research of well-being during the pandemic period by the means of time diary.

3.1. Online teaching before COVID-19 era

The use of the Internet and information communication technology (ICT) has become a widespread practice in all aspects of higher education over the last decades. Institutions of higher education increasingly rely on ICT and Internet media to support their educational process, management, and administrative functions. As faculty members continue to blend their instructional practice, institutions will need to rethink and reorganize the systems that support instruction. Blending, on the course, program, and institutional levels, is a dynamic process, which includes potential changes to curricular content, pedagogy, ICT infrastructure, student behavior, faculty attitudes, and organizational conditions. Sufficient training and practical experience in this area had a positive effect during COVID online education (Brown, 2016).

Institutions of higher education are creating courses and programs online to serve a student population that is more dispersed geographically: one that is older and less likely to be able to attend school full time and accustomed to on-demand interactions



in other facets of their lives (Nicholson, Sarker, 2002). Carlson (2005) stated that a new generation of college students has arrived. To meet the needs of these students, colleges must rethink how they operate; professors need to retool the way they hold their classes. Whether the issues include lectures on iPods, classrooms that incorporate videos and video games, classes that meet virtually, students who choose to learn from each other rather than the professors, search engines that may or may not be reliable, or animated library databases, a new kind of student has arrived, and pedagogy is changing. Online learning opportunities are rapidly expanding in higher education.

Samarawickrema (2005) studied whether students were ready for flexible, independent learning. Using an exploratory design with a questionnaire and focus group interviews, the researcher explored common problems, similarities, and differences among learners from Southeast Asia, local students from Australia, and other international students from Israel, Mauritius, Norway, Sri Lanka, and the United States. All subjects were in their first semester of their first year in undergraduate education and were given the option to be independent learners – not attending class. While learners in this study used only print resources, the findings were instructive for online teaching. The researcher found that independent learners experienced problems in managing time and looked to the teacher and the structure provided by the classroom to discipline, regulate, and guide them through their work. Samarawickrema's findings, though not directly addressing the virtual classroom, were consistent with Choy, McNickle, and Clayton (2002), in that course design needs to encourage a student's discipline and consistent approach to work.

The themes of student discipline and time management were reinforced by Vonderwell and Turner's (2005) case study at a large Midwestern university. One section of a technology applications course was offered online using the BlackBoard[®] online learning tool (Bb). Twenty-four students were enrolled; 22 of the students successfully completed the course. The syllabus, tutorials, and course exercises were all designed to encourage the students to be selflearners and evaluators of the quality and integrity of online content. The students, who were undergraduate pre-service teachers, were provided learning team activities that encouraged them to explore areas beyond what the course contained and to develop new ways to use computer instructions as a classroom tool. Multiple sources of information were used to collect data: student interviews, e-mail, group discussion transcripts, journals, and course documents. All participants indicated that the online learning environment fostered their responsibility and initiative toward learning. Participants reported that they were more self-disciplined, had learned to manage their time, and were better able to use resources effectively. The students assigned words to their experience such as independent learning, free, open, and individualized.



Students reported that not being able to rely on an instructor's face-to-face classroom instruction forced them to use multiple resources to learn the content and become their own investigators in their learning. Perhaps the most important finding was that online instruction enabled students to reflect on their learning and to learn about themselves. Course design was a key element of course success in this study. Consistent with the finding of Powers and Rossman (1985) with respect to graduate study, peer interaction was also a key contributor to student satisfaction.

According to Powers and Rossman (1985), professor-student interaction is a significant determinant of graduate students' sense of satisfaction. Diekelmann and Mendias (2005) looked at student-faculty relationships online, as virtual courses may change a teacher's customary way of knowing and connecting with students. They also noted that relationships may be even more complicated when group or team projects are assigned online. Using narrative pedagogy, teachers shared and interpreted their experiences of supporting and attending to students' knowing and connecting with each other in online courses. Online teachers used practices that set limits and rules and reassured group members of fair treatment. Diekelmann and Mendias reported that some faculty who taught online made a special effort to become a supportive presence in student-to-student knowing and connecting by emphasizing students' accountability to their groups. This was accomplished by posting notes, sending e-mail, and participating in discussion boards.

Higher education programs are increasingly moving into the online marketplace in response to the changing demographics of the post-secondary learner and new expectations for on-demand learning. Given the growth in the online education market, geographic barriers to instruction are almost nonexistent. Web-based instructional programs create competition for students that were heretofore geographically bound to a local college or university. While the quality of a program is certainly the first measuring stick for program evaluation in today's market, higher education institutions also must consider student satisfaction. Much of the research on student satisfaction with respect to higher education is related to undergraduate education. One study related to student satisfaction with graduate education noted that student satisfaction is related to faculty-student interaction, peer interaction, and a sense of intellectual stimulation of both the student and the student's peers (Powers, Rossman, 1985). Data from studies of online courses also suggested peer interaction, faculty-student interaction, and subject matter are important contributors to student satisfaction. Findings suggested that faculty-student interaction and peer interaction are two important elements to online learning at the graduate level as well.

Studies of online programs further pointed to several issues that, if addressed, fostered student satisfaction. These issues included timely, helpful communication with the instructor; clear directions regarding course expectations, student assignments



and requirements; and support for enrolment and data security (Choy, McNickle, Clayton, 2002; Vonderwell, Turner, 2005).

Faculty satisfaction is considered an important factor of quality in online courses. A study was conducted to identify and confirm factors affecting the satisfaction of online faculty at a small research university, and to develop and validate an instrument that can be used to measure perceived faculty satisfaction in the context of the online learning environment. The online faculty satisfaction survey (OFSS) was developed and administered to all instructors who had taught an online course in fall 2007 or spring 2008 at a small research university in the USA. One hundred and two individuals completed the web-based questionnaire. Results confirm that three factors affect satisfaction of faculty in the online environment: student-related, instructor-related, and institution-related factors. Faculty satisfaction is one of the five pillars of quality, together with student satisfaction, learning effectiveness, access, and institutional cost-effectiveness (Lorenzo, Moore, 2002). Components of faculty satisfaction need to be investigated as online education becomes more prevalent and dynamic forces such as adoption rates, learner expectations, levels of support, and other conditions continue to change.

As the number of online students and subsequently online course and degree programs offerings increase, so does the number of instructors who are being tasked to teach online. In a study conducted by Seaman (2009), 34.4% of instructors surveyed had taught at least one online course, and approximately 23.6% were teaching an online course at the time the study was conducted. Many research efforts have been devoted to investigating important elements of faculty adoption of technology in teaching, participation in distance education (Clay, 1999; O'Quinn, Corry, 2002), and what motivates instructors to teach online (Panda, Mishra, 2007). Instructors are not only important in the success of meeting university goals and outcomes, but they also have an impact on the success of academic programs because "faculty play an essential role in developing and rethinking online courses" (Meyer, 2006, p. 43). One important aspect in the delivery of online courses and programs, however, is faculty satisfaction. Faculty satisfaction is so important that the Sloan Consortium includes it as one of the five pillars in the quality framework for online education (Bourne, Moore, 2002).

Instructor satisfaction is defined as the perception that the process of teaching in the online environment is efficient, effective, and beneficial for the individual. It is one element in the quality framework for online education developed by the Sloan Consortium (Bourne, Moore, 2002). Researchers have documented that many instructors are satisfied teaching in the online environment and are willing to continue to teach online. Some instructors, however, are critical of teaching online. Instructors are concerned about limited interaction (Bower, 2001), and they are aware that online teaching is time consuming and labour intensive which can easily lead to burnout (Hogan, McKnight, 2007). Faculty and student satisfaction are not only two integral elements



of the quality framework (Bourne, Moore, 2002), they tend to impact each other. Student satisfaction was defined as an important element in faculty satisfaction by Bolliger and Wasilik (2009). Student satisfaction is defined as the value students associate with their educational experiences in formal settings. Important factors in student satisfaction are the instructor, technology, and interactivity. When students are satisfied with their online learning experiences, one can argue that faculty may be more satisfied with their online teaching experience than when students are less satisfied. Four significant themes in the literature related teaching online from the faculty perspective emerge. They include: (a) interaction between students and peers and between instructors and students; (b) instructor planning, designing, and delivering online instruction; (c) necessary institutional support; and (d) affordances of online teaching and learning. Each element is discussed below.

Bolliger, Inan, and Wasilik (2014) developed a self-reported measure of instructor satisfaction in the online environment building on previous research and instruments. Results indicate that the developed instrument, OISM, is a valid and reliable instrument that can be used by administrators and researchers to gauge faculty satisfaction. It can be used to assess effects of course participants' interaction, existing institutional support, and affordances of technologies integrated in online teaching. The final version of the validated OISM is comprised of a total of 27 items after some modifications (e.g., excluding a few items that proved to be problematic) were made that resulted in a more refined version of the instrument and confirmed the hypothesized five-factor model.

Construct	Definition
Instructor-to-student interaction	Instructor satisfaction derived from the format, type, frequency, and quality
	of two-way communication and interaction with online students
Affordances	Instructor satisfaction derived from functionary and potential benefits
	of the online learning environment
Institutional support	Instructor satisfaction derived from the amount, quality, and timeliness
	of support provided by the institution
Student-to-student interaction	Instructor satisfaction gained from the quality and quantity of active
	communication, interaction and collaboration among students
Course Design/Development/Teaching	Instructor satisfaction derived from the teaching process

Table 3. Definitions of constructs

Source: own processing based on Bolliger, Inan, Wasilik, 2014, p. 187.

Participating instructors reported they are generally satisfied with their online teaching experiences. Undoubtedly, some are more satisfied than others, and some individuals experience more satisfaction with certain elements that pertain to online teaching than others. The examination of descriptive results indicated that the two



scales related to interaction had the lowest mean scores. These results could pertain to the nature of the online learning environment where instructors need different competencies to integrate interactive learning activities. Instructors may be unfamiliar with instructional strategies or newer media that facilitate interaction and promote student engagement and therefore could perceive online teaching as too work intensive (Conceição, 2006).

Herzberg's two-factor theory (Herzberg, Mausner, Snyderman, 1959) provides a framework for explaining faculty satisfaction with online teaching and has demonstrated to operate superbly in the higher education setting (e.g., Waltman et al., 2012; Hurtado, Ruiz Alvarado, 2015). According to the theory, there are different factors (motivators and hygienes) that lead to job satisfaction and job dissatisfaction. Herzberg (1968) argued job satisfaction and job dissatisfaction are not opposites as they are on different continuums. Therefore, the opposite of job satisfaction. Motivators increase an employee's job satisfaction and include the job content or intrinsic job characteristics, such as flexibility, personal growth, independence, and the employee's interest in the work itself. Hygienes increase an employee's job dissatisfaction and entail the job context or extrinsic job characteristics, such as pay, relationships with colleagues and students, policies, and institutional support.

Based on the literature, the main variables investigated to influence faculty satisfaction with online teaching include the following: training, motivation, passion, flexibility opportunities, institutional support, university policies (in general), technology support, course management system components, connections between students and instructors or other students, faculty's expectations of students outcomes, time involved and provided for as well as autonomy in designing and developing online courses, student evaluations, and pay (e.g., Bolliger, Wasilik, 2009; Ang, Breyer, Pitt, 2018).

According Marasi, Jones, and Parker (2022) all these results provide important implications for US higher education administrators as they make decisions regarding onsite versus online course offerings. According to US higher education administrators' opinions, less than 30% of faculty 'accept the value and legitimacy of online education' and around a third of faculty are a considerable hindrance in increasing online courses (Allen, Seaman, 2016, p. 26). Therefore, it is important for higher education administrators to find ways to increase faculty satisfaction with online teaching in attempt to reduce faculty as an obstacle increase other faculty and student attitudes and behavior. For instance, improve quality of instruction, commitment, and continuation of online teaching for faculty. For students, increase learning, motivation, performance, satisfaction, completion rates, and retention rates.

The COVID–19 pandemic in 2020 illustrates the need for providing support to faculty for online teaching. Higher education institutions across the US, and other countries,



moved all courses online for the duration of the Spring semester. Faculty with no online teaching experience were given little notice, typically a week of preparation, to move onsite courses to an online format. Inside Higher Ed recruited a panel of experts to address this sudden move. Responses to the question, Do you believe the end result (recognizing that it may be some time before we can judge) will be more professors believing in the quality of online learning and wanting to incorporate the best of what it can do into their teaching, a blurring of the distinction between online and in-person and a closing of the perceived quality gap? varied but all believed this semester should not be used as an evaluation of the effectiveness of online teaching. Several experts referred to the transition as a 'black swan' moment that could shift the teaching paradigm. Other experts expressed concerns for faculty first partaking in teaching online courses due to the abrupt shift may have a negative experience causing a 'never again' attitude; however, one expert stated it was absurd to compare this sudden movement to the thoughtful development of an online course. All experts emphasized the importance of institutional support and training to assist faculty in providing well-designed online courses. US higher education institutions may ameliorate faculty satisfaction with online teaching in several ways. First, before the online course begins higher education institutions should attempt to have faculty believe teaching online is worthwhile and understand the institution itself also believes it is significant, administer training for faculty especially regarding increasing connections with and between students, give faculty the time needed to design an online course, and provide faculty with a course management system that has multiple capabilities. Second, during the online course higher education institutions should provide support for technical issues and try to have faculty believe they have an accommodating work schedule and independence with the online course. Also, higher education institutions should consider implementing reasonable policies with online teaching to improve students' learning process for better online course success. However, it should be noted higher education institutions cannot control faculty expectations for students' performance.

3.2. Research of well-being under COVID-19 pandemic

Most of the research focusing on various aspects of SWB during the COVID–19 pandemic were realised in China. Wang et al. (2021) analysed well-being of adolescents. They asked respondents to fill information for consecutive 14 days, from 5 morning to 12 midnight. To record the information, respondents could use their cell phones, tablets, or computers. Emotions of adolescent respondents were measured based on Positive and Negative Affect Scale for Children (PANAS-C). Positive affect included four items (grateful, energetic, happy, hopeful); negative affect included other three items (sad,



anxious, depressed). Adolescents reported their mood during the past 24 h on a 5-point scale from 1 (not at all) to 5 (extremely).

Jiang (2020) researched 231 Chinese participants, who were recruited through advertisements posted on a university platform and on social media and with the assistance of community volunteers. Participants were asked to fulfil an online survey, using the Wenjuan.com online survey system. Participants fill in the data to daily diary for 14 consecutive days. URL link to the online daily questionnaire was sent to the participants around 6 p.m. each day to remind them to complete the daily questionnaire. Questionnaire included questions about daily subjective health, daily actual affect, and daily stress related to COVID–19. To motivate participants to fulfil data for all 14 days, participants get a remuneration – supermarket coupon valued at US\$25.

In European conditions, there are only few research focusing on well-being during the COVID-19 pandemic. Schmidt et al. (2020) analysed well-being of school-aged children in Germany. Research took place between 28th of March and 27th of April 2020. Parents of school-aged children fill in an online 21-day diary. Authors used specific methodology adjusted to COVID pandemic (PACO study; Psychological Adjustment to the COVID-19 pandemic). Online questionnaires were distributed via soscisurvey. de. To ensure the suitable research sample, pre-research stage included recruitment of the potential participants. Enrolment for the study was between March 27, 2020 and April 3, 2020. After the registration, participants were asked to fulfil the daily questionnaires for the following 21 days. E-mails containing the link to the daily questionnaire were sent out at 7 p.m. each day and participants were requested to complete the survey before going to bed. As a remuneration for the participation in the research participants were offered 50€ voucher. To measure the affective well-being, researchers used eight emotional states during the day (afraid, angry, sad, worried, happy, cheerful, balanced, and relaxed), on a 7-point Likert scale from 1 = "not at all" to 7 = "very". Daily parental positive affect was calculated as average of the four items - happy, cheerful, balanced, and relaxed; daily parental negative affect was calculated as the average of the items afraid, angry, sad, and worried.

As our project focusses on the well-being of university teachers, we describe also so far research linked with university environment. Hagedorn, Wattick, and Olfert (2021) researched students at the university in Appalachia, recruited via email through the university listserv. Each student got an email with the description of the study and a link to the Qualtrics platform. The study was realised from early March to late April 2020. Those students who had not completed the survey receive three reminder emails. Within the research, they analysed wild areas (questionnaire included 161-items), part of them focused also on SWB (affective such as feelings of isolation, stress, fear of illness, and cognitive, such as loss of income, increased expenses, access to lab and equipment, etc.).



The only so far research focusing at least partly on university teachers was research of Wood et al. (2021). They interviewed teachers from two universities. In the UNI 1, there were 784 respondents (out of 3900 staff members, recruited through a general email), in the UNI 2, there were 390 respondents (out of 4950 staff members, recruited through staff newsletter). The research included two four-week diary studies conducted in two English universities (the first round in spring, the second round in autumn 2020). All staff of the university (teachers as well as non-pedagogical staff) were involved in the study. The research was based on a one-week interval for the diary as the pattern of employees' work and non-work activities reflect a seven-day cycle. The main goal of the research was to concentrate specifically on the effects of the changing location of work and the issues of home working. Within the research, both general mental well-being (covering eudemonic elements of well-being, personal growth and the purposefulness of life), and hedonic well-being (expressed by two dimensions: anxiety-contentment and depression–enthusiasm) were analysed.

3.2.1. Methods of data collecting during COVID-19 pandemic

Collecting data under COVID–19 pandemic is challenging. As it is recommended to keep a social distance, the standard form of face-to-face interview is not possible (face-to-face interview is one of the common instruments to collect time diary data). To find an inspiration for our research and project, we checked the instruments that other researchers used for collecting either time allocation or well-being information during COVID–19 pandemic.

We can divide the most common instruments for data collection during COVID–19 into three groups:

- Phone survey, with the support of state institutions

Asanov et al. (2021) interviewed 2412 students in Ecuador. Each phone call took app. 20 min. The survey took 60 survey days. Students were asked to complete detailed 24-hour time use questionnaire based on the American Time Use Survey. Interviewers recall students' activities from 4 a.m. the previous day to 4 a.m. on the interview day, in half hour intervals. Students could select from 24 pre-coded activities developed during pre-testing, plus a code for other activities. Pre-coded activities included sleeping, working (which includes working in a household business, working in another job for pay, and looking for work), household tasks (meal preparation, cleaning, laundry, grocery shopping and looking after younger siblings), educational activities (reading books and magazines, viewing educational content, learning college options, and doing homework and teacher exercises), and leisure activities (watching tv, playing musical instruments, practicing a hobby or sport, hanging out with friends in person or online, and surfing the internet).



- Online platform survey

Cellini et al. (2020) realised research in Italy, using the anonymous online survey shared via social media. The questionnaire was Available at social media for 5 days period. In total, they obtained responses from 1,310 young adults. Their questionnaire focused on the frequency of particular activity (focused on digital media activities, in total 10 digital media activities).

- Through a well-reputed online survey company

Andrew et al. (2020) realised research in the UK, via the survey company. Survey company collected data from 5,582 participants (parents living with children). Survey was realised in April – June 2020, by telephone call; median completion time was 22 minutes. To motivate the participants to follow the instructions of interviewers and to provide required data, participants got a small payment in compensation. Participants were asked to fulfil the Time use diary, with a day divided by one-hour slot. Respondents could report multiple activities during the hour. Activities were pred-defined (however, more broadly than they are in standard TUS). By the means of survey company, it was possible to collect 3 types of diaries (for adults, for children aged 4–11, and for children aged 12–15).

3.3. Innovative data collection method – CaDDI

The recent global pandemic has created an upsurge in interest in the ways in which people are using their time under conditions of lockdown and social distancing. The requirement is for a diary instrument with an online format that can be rapidly administered, and in which respondent burden is not too onerous. The CTUR 9-Country Click-and-Drag Diary Instrument (CaDDI) was originally designed for deployment among an international online market research panel covering 9 different countries. The initial aim was to fill the gap in national comparative data on the enjoyment of different activities (the UKTUS 2015 was among the first national-level time use diary survey to include a field asking respondents how much they were enjoying their time throughout the day). Nine nationally comparative populations in Europe and the USA were covered: UK, USA, France, Germany, Netherlands, Sweden, Finland, Italy and Spain. The data was collected between November 2015 and May 2016 using quotas on socio-demographic factors such as age, gender, education and employment, with a minimum number of respondents guaranteed according to nationally representative quotas. Each country provided over 1,000 'diary days' of data, with a total sample of more than 10,000 days of data across the 9 countries, based on interviews with 6,000 respondents, most of whom completed 2 diary days. By using the same instrument and an identical visual demonstration video in all countries, the 9-country



data is uniquely well-placed for international comparisons. An article by the CTUR team based on this data combines location and 'who were you with at the time' information to identify baseline (pre-lockdown) prevalence of 'risky' behaviours likely to be associated with transmission of the COVID–19 virus in different countries (Sullivan et al., 2020).

The summary of pros and cons of methods of data collection under the COV-ID–19 pandemic circumstances (or in general without using trained interviewers and the necessity of personal face-to-face communication with respondents) are reported in the Table 4.

Method	Pros	Cons
Phone survey	Almost fully replace face-to-face interview. The interviewer can explain the individual questions in more detail.	Time consuming. Necessity to train phone interviewers (extra costs for recruiting and training interviewers). Respondents must be informed in advance about
Online platform survey	Possibility of rapid dissemination via social media; snowball method. Respondents can choose the most suitable time for filling up the questionnaire. No necessity to train interviewers. Survey is accessible via PC as well as smart phones. Various online platforms offer free survey forms (minimum or no cost).	To obtain as large a research sample as possible, increased efforts are required to promote the online survey. The descriptions for each question in the online survey must be very detailed so that respondents can answer the questions in a relevant way, without the need for additional explanations.
Online survey company	Experience of survey company. Survey company may provide also processing of the database and its preparation for statistical analysis of the data. If required, survey company can ensure a representative sample of respondents.	Expensive — better the survey company, higher the cost. The client is fully dependent on the survey company — usually cannot influence the process of data collection or the methods of interviewing. The client will only know the quality of the research according to the submitted results — risk of dissatisfaction.
Innovative data collection method – CaDDI	Specially designed for time use data collection. User friendly online platform (Click-and-Drag). Enables unified data collection.	Expensive. Required detailed description for respondents.

Table 4. Methods of data collection (time allocation and well-being) during COVID–19 pandemic

Source: own processing.

3.4. Research on the teachers' wellbeing during COVID–19 period

The circumstances of the pandemic have brought unprecedented psychological pressure on the population. The adverse psychological impact of the lockdown restrictions, stay-at-home orders, quarantine, and other repercussions span anxiety, post-traumatic stress symptoms, psychological distress, confusion, panic disorder, anger, depression, insomnia, and emotional exhaustion (Brooks et al., 2020; Qiu et al., 2020; Cénat et al., 2021).

In response to the outbreak of the COVID–19 pandemic, many institutions around the world were forced into lockdown in order to contain the spread of the virus. This has been the case in higher education institutions. To ensure continuous provision of education, most transitioned to emergency remote instruction, so called online teaching.

The combined effect of lockdowns and the transition to online environment have severely affected teacher and student coping, their work satisfaction and well-being. Based on more than two years of pandemic experience i tis possible to evaluate the impact of these various determinants and circumstances and know the real benefits and risks of this form of teaching. It may provide helpful guidelines for university teachers as to how help alleviate the adverse effects of the continuing pandemic and possible similar disruptions leading to school closures on coping and well-being.

Where the psychological impact of the pandemic in education was a concern, the existing literature has tended to focus on the student population. A survey of students' emotions during and perceptions of the shift to online teaching at a Greek university (Karalis, Raikou, 2020) found that although the majority of the students were satisfied with the new way of attending classes, upon the closure of the university over three quarters had felt negative emotions such as stress and anxiety about how the studies would be completed, fear of the possibility of non-continuation of studies, and/or sadness about the interruption; after the online classes had started, some of the initial negative emotions gave way to an increase in relief that the semester would not be lost, and joy at the continuity of the classes. Across the Turkish border, students reported high perceived stress, mild generalized anxiety, and low satisfaction with life (Aslan, Ochnik, Çinar, 2020). Amendola et al. (2021) study carried out among students in Switzerland showed that anxiety symptoms decreased with time, and its levels were predicted by older age, female gender, out-of-country nationality, loneliness, concerns about own health (positively), and resilience and social support (negatively). A study by Alemany-Arrebola et al. (2020) showed that college students with a higher level of anxiety expressed more negative emotions and declared lower academic self-efficacy.

Regarding teachers, a study carried out among teachers from the Basque Country after school reopening showed that levels of anxiety, depression and stress symptoms



were influenced by gender, age, job stability, the level of education taught, and parental status (Ozamiz-Etxebarria et al., 2021).

Wellbeing constitutes a complex and multi-dimensional construct related to life satisfaction, resilience, work outcomes, more adequate regulation strategies and better health (Keyes, 1998; Diener, 2009; Dodge et al., 2012; Fisher, 2014), and is defined in various ways generally within either a hedonic or a eudaimonic theoretical approach (Kesebir, Diener, 2008). According to the hedonic tradition, subjective wellbeing constitutes "a person's cognitive and affective evaluations of his or her life" (Diener, Oishi, Lucas, 2003, p. 63). The cognitive component reflects a sense of satisfaction with life, whereas the emotional element is composed of high positive and low negative affect referring to moods and emotions (Diener, 1984; Kahneman, Diener, Schwarz, 1999).

In most theories, a key indicator of wellbeing is positive affect (Lyubomirsky, King, Diener, 2005; Cohn, Fredrickson, 2009; Coffey, Warren, Gottfried, 2014; Szczygieł, Mikolajczak, 2017). However, existing negative emotions and mood should not be ignored as emotional wellbeing has been defined as "the ratio of positive affect (PA) to negative affect (NA) in a person's life over a representative time period" (Larsen, 2009, p. 249). Studies indicate that the amounts of positive and negative affect are uncorrelated (Diener, Emmons, 1985; Schmukle, Egloff, Burns, 2002), and that their relative contribution to emotional wellbeing varies (Larsen et al., 1990).

Many researchers have indicated that the negative affect system is more reactive than the positive affect system (Ito et al., 1998; Cacioppo, Gardner, 1999; Grinde, 2012). Moreover, Larsen (2002) indicated that the same levels of objectively bad and good events cause respectively higher levels of negative than positive affect. As observed by Musch and Klauer (2003), compared with positive ones, negative events engage more attentional resources and are stored more accessibly in memory. These findings lead to the conclusion that negative affect is stronger than positive affect with respect to its reactivity, duration, and cognitive processing (Larsen, 2002; Larsen, Prizmic, 2008). Individuals tend to pay more attention to negative information compared to positive information, processing and recalling the former more thoroughly (Baumeister et al., 2001; Rozin, Royzman, 2001). As a result, negative emotions and mood influence overall emotional wellbeing to a greater extent than positive ones (Larsen, 2009). For this reason, Grinde (2016) suggested that negative feelings should be included in wellbeing measures.

Jelinska and Paradowski (2021a) examined how college and university instructors dealt with teaching online in these unparalleled circumstances, with a focus on how factors connected with their daily lives and livelihoods influenced their well-being. Between April and September 2020, a comprehensive online survey was filled out by 804 higher education (HE) instructors hailed from 6 continents and 92 countries and autonomous territories, half of them (52%) from Europe. They explored how sociodemographic variables such as gender, age, relationship status, living conditions, and length



of professional experience nontrivially affected situational anxiety, work-life synergy, coping, and productivity. The well-being of students and instructors has been upended, to the extent that many instructors started contemplating quitting the profession (Business Wire, 2021; Gewin, 2021). The current study has attempted to reveal some of the mechanisms responsible for college and university instructors' differential coping with the transition and wellness, with the resultant model predicting approximately 49% of variance in negative affect.

The impact of anxiety was prominent not only in the statistics but was also a recurrent theme in the open-ended questions, where the respondents repeatedly mentioned "anxiety and fear about the pandemic," "general anxiety about the world right now," "anxiety, workload, uncertainty," "my own personal struggle with anxiety increasing due to COVID," and "the uncertainty and anxiety surrounding the state of the world in general."

The adverse impact of loneliness is straightforward and, as with anxiety, was a recurrent theme in the answers to the open-ended questions, which frequently mentioned "isolation, not being able to interact with my students, not being able to teach them;" "I feel isolated. The teaching is fine, but I have had very little interaction with colleagues, which makes me feel irrelevant;" "lack of contact with the students. I felt very isolated and like I was talking into the void;" "the isolation and feeling that I am not connecting with students and fellow teachers in my school;" or "disconnection from students." Loneliness constitutes an emotional experience provoked by unfulfilled needs for social contact (Margalit, 2010). Cacioppo and Hawkley (2009) point out that the experience of loneliness impairs individual ability to self-regulate affecting physiological, cognitive, and emotional functioning. It may constitute an important risk factor for depressive symptoms even for healthy people (Grov et al., 2010). Neto and Barros (1992) in their study examining loneliness among teachers found that educators whose professional experience was longer than 20 years were significantly lonelier than those with a shorter professional experience; the former group also experienced lowered self-efficacy, which constitutes one of the predictors of job satisfaction (Lent, Brown, 2006; Duffy, Lent, 2009). While loneliness is usually a temporary state, COVID-19-induced lockdown and social distancing may have extended it. Lack of personal contact with teachers and longing for live communication during the lesson were downsides of remote instruction indicated by around 80% of the students in a study by Karalis and Raikou (2020). The significance of the right work-life synergy and maintaining the right priorities is especially important in view of the reality that ensuring of teacher and student wellbeing may sometimes be at odds with pressures to "cover the syllabus": "[t]here is a potential tradeoff between ensuring well-being and significantly increased screen time derived from a transition to distance learning" (Reimers, Schleicher, 2020, p. 8). Findings from a sample of nearly 1,500 educators (Jelinska, Paradowski, 2021b) showed



that the most engaged and best-coping teachers were characterized by having modified their lesson plans and eased the grading scheme during this period.

Even before the outbreak of the COVID–19 pandemic, many authors reflected on the new information technology challenges in university education. College and university instructors are increasingly incorporating online tools into face-to-face teaching approaches, such that blended instruction is forecasted to become "the new traditional model" (Ross, Gage, 2006; Watson, 2008; Norberg, Dziuban, Moskal, 2011). Six influences on faculty member's adoption and use of online tools for face-to-face instruction that cut across the literature are identified: faculty member's interactions with technology, academic workload, institutional environment, interactions with students, the instructor's attitudes and beliefs about teaching, and opportunities for professional development (Brown, 2016).

One of the measures adopted by the government of Spain during the COVID–19 pandemic has been the elimination of face-to-face classes in all universities, requiring that all teachers had to conduct their classes in an online mode. Penado Abilleira with colleagues (2021) studied how this adaptation among university teachers affected their job performance due to the technostress (objective and subjective) that they may have suffered. This is the first study of technostress in university teaching staff to be carried out at a time of home confinement, when, for the first time, university education was forced to develop completely online, regardless of direct teacher-student contact.

Based on the person-environment misfit theory (P-E fit theory), the sample consisted of 239 teachers from face-to-face and online universities in Spain who were asked to identify the type of technostress, feelings of technostress, and impact on job performance as a result of online teaching due to the COVID-19 pandemic. The sample comprised of 46.6% men and 53.4% women from Spanish universities, aged between 26 and 69 years. The participating teachers had experience teaching for an average of 15 years. The technostress questionnaire (Wang, Li, 2019), based on a multidimensional person-environment model to estimate the phenomenon of technostress among university teachers, was used. In the instrument, technostress was conceptualized as the result of a maladjustment or misfit in three main areas of people's interaction with the environment in which they work: from person to organization (P-O; person-organization misfit), from person to technology (P-T; person-technology misfit), and from people to each other (P-P; person-people technology). The maladjustment of people to the organization and technology was also conceptualized using a double path: on the one hand, the lack of abilities of the subjects and, on the other, a lack of resources to adapt to changes.

In relation to gender, results showed significant differences, indicating that women suffer more technostress compared to their male colleagues. Results reflected that group of teachers who suffered the most from the negative consequences of technology have



been female teachers from face-to-face universities who are older, have more years of experience, and consequently, hold a higher position. It was also observed that although the effect on job performance was similar for online teachers as well as face-to-face teachers, the variables that explained this effect were different. For the online teachers, there was a misfit between the demands and resources, which are explained based on the previous theory (P-E fit theory). Teachers from face-to-face universities pointed to the lack of instructions from their organization, along with subjective feelings of techno-inefficacy, as the reasons behind the decline in job performance during the lockdown period. Looking ahead to future research on the incorporation of information and communications technology in teaching work, it is necessary to consider variables associated with technostress, both objective and subjective, to increase the effectiveness of integrating emerging technology into teaching work.

It was shown that older teachers and those with more years of experience (consequently holding the highest professional job categories), are those who have suffered negative consequences of technology to a greater extent during the confinement period. Contrary to what has been pointed out in other studies (Li, Wang, 2020), there appears to be an influence of gender on the level of technostress observed in university teachers, with women suffering more negative effects of technology compared to men. The influence of gender on technostress is consistent with other studies on student populations (Wang, Tan, Li, 2020).

The findings of this study showed that the response of Spanish universities to the COV-ID–19 pandemic generated a lack of confidence in technology for online university teachers as well as a need to improve job performance. This decrease in job performance could be explained by objective aspects such as a lack of resources or instructions from their organization in order to carry out the new functions that they were expected to fulfil during the period of confinement. In the case of the face-to-face university teachers, a combined effect of objective aspects (e.g., lack of skills to comply with the instructions given by their university during the shift to online teaching or an absence of instructions), together with subjective feelings of techno-inefficacy, was observed.

The results obtained contrast with what has been established thus far by other authors which indicate that the employees of organizations with an environment characterized by high centralization and high innovation are the more likely to report a feeling of technostress (techno strain) in comparison with employees of less centralized and more innovative organizations. Based on these conclusions, it would be possible to expect that online teachers experience the effect of more subjective components of technostress, yet the results obtained demonstrate the opposite.

Professors at online teaching universities pointed out objective aspects or difficulties in the technological resources provided by the organization in which they worked



as the main difficulty in their work performance during the period of confinement caused by the COVID–19 pandemic. In contrast, teachers from face-to-face universities had to make the greatest adaptations during confinement by incorporating technological platforms and resources that were formerly used less in their previous teaching environment. In both online and face-to-face institutions, training, rehearsal, a series of courses with special reference to less-skilled employees, teamwork, and sharing knowledge should always be available to employees to improve job performance and reduce the negative effect of techno-complexity (Al-Ansari, Alshare, 2019).

There are several factors that affect WB college teachers. Their impact increases in most cases during stress periods, especially during the COVID-19 pandemic. Academic workload and workaholism are among them. E-Learning in Egyptian universities has increased exponentially since the COVID-19 outbreak has started. University staff has changed their whole approach to tackling and adapting to new market conditions. With its implications for their mental health, especially those who have been coined to be workaholics. Workaholism is described as a constant, internal drive to work and behavioural addiction to work. Studies have shown the negative associations between workaholism, job performance, and health results as disrupted sleep. Allam et al. (2021) compared the prevalence of workaholics among the academic staff of practical and theoretical Faculties in Egyptian universities using the Dutch Workaholism Scale (DUWAS) and determined associated sleep problems. Also, they studied the added impact of E-learning on the prevalence of workaholism frequency during the COVID-19 pandemic. A cross-sectional study was conducted among 336 participants. Work addiction was assessed using DUWAS as well as questionnaires on personal, occupational characteristics, and sleep problems. DUWAS scale was repeated after six months during COVID-19 pandemic to investigate the impact of e-learning on the workaholic behaviour of the studied groups.

The authors revealed that the prevalence of workaholism was 33 percent. After the COVID–19 pandemic, workaholic frequency was significantly increased to be 46.4%. Research showed that workaholism had negatively impacted sleeping in terms of difficulty initiating sleep, difficulty maintaining sleep, and insufficient sleep. The prevalence of workaholism appears to be high among university staff members especially after COVID–19 crisis. Sleep problems were linked to workaholics more than other workers. They recommend encouraging employees to work to their contracted hours, as excess work over extended periods may have adverse effects not only on organizational productivity but also on their health. This could be explained by more workload, technology stress, and longer work time required among university staff members for e-learning preparations. This has generated more mental fatigue that could be a risk factor for workaholism. Workaholics devote a significant amount of time and resources to their jobs, with little regard for the separation of work and personal life. They also



work late at night and on weekends, sacrificing other personal and family activities and relationships. Almost all these variables are amplified because of the COVID–19 Pandemic's transition to E-learning.

What were the main obstacles with this difficult situation, and were there conditions which helped them to overcome the new challenges? These are research questions of the survey with a sample of 1,152 lecturers at universities in Austria and Germany (Feldhammer-Kahr et al., 2021). The survey provided insights into lecturers' experiences in the COVID-19 pandemic during the 2020 summer semester as well as into the development of respective support measures to assist their transition from in-person to online teaching. The survey focused on the lecturers' appraisals of the novel situation as challenging or threatful. These appraisals are important for approaching a situation or shying away from it. However, how well a person adjusts to a novel situation is also influenced by personal and environmental resources which help to overcome the situation. The survey focused on four possible sources of influence: internal assessments of the situation determining it to be threatening and/or challenging, personal resources, attitudes, and support by the organization. It was investigated to which degree these sources of influence could contribute to the lecturers' satisfaction (or dissatisfaction) with their teaching processes. Predictor variables were the lecturers' appraisals of challenge and threat, perceived support by the university and sense of belonging to the university, temporal resources, proficiency in using digital technologies, length of teaching experience, and gender. Lecturers were mostly satisfied with their teaching activities. Together with the perception of a low threat potential, challenge appraisals contributed strongest to satisfaction. In comparison, assessments of actual personal resources, skills in the use of digital technologies, teaching experience, and temporal resources were important but contributed less to satisfaction than challenge appraisals. According to the authors it seems that lecturers were only able to use these resources when the technological resources were available and when the lecturers were confident in their technical abilities.

Three aspects of lecturers' satisfaction were recorded in the survey: overall satisfaction, lecturers' satisfaction with the implementation of their instructional concept, and perceived knowledge gains. Looking closer at the job characteristics of lecturers can help provide greater insight into this study's results. University lecturers typically enjoy high responsibility along with high autonomy in their work (Sharma, Jyoti, 2009). The activity of teaching itself, e.g., being able to establish a relationship with students is also mostly regarded as a satisfying element of the profession (Szromek, Wolniak, 2020), constituting a source of social support, something seen as an important job satisfaction variable (Gerich, Weber, 2020). Even in a novel and difficult situation like the one experienced during the summer semester of 2020, there were still certain degrees of freedom for implementing new instructional concepts. The results indicated



that the lecturers were mostly satisfied with their teaching activities, and felt they were able to overcome the barriers presented by the situation. Altogether, they emphasized the merits of challenge appraisals. Together with the perception of a low threat potential, challenge appraisals contributed strongest to satisfaction. Appraising the teaching situation as a challenge was related to a focus on the opportunity for self-growth and gains in knowledge and skills These kinds of challenge appraisals are usually associated with more positive expectations for success (Skinner, Brewer, 2002).

Feldhammer-Kahr et al. (2021) pointed out that assessments of actual personal resources, skills in the use of digital technologies, teaching experience, and temporal resources were important but contributed less to satisfaction than challenge appraisals. It should be noted that the participants regarded their temporal resources as well as their skills and knowledge in the use of digital technologies rather favourably and as sufficient for their teaching. The mere disposal of resources appeared insufficient for handling difficulties experienced in the COVID–19 semester successfully and needed to be accompanied by confidence in the own ability to overcome barriers, along with an attitude that the situation would also offer opportunities for self-growth and knowledge gains.

The aim of other interesting research was to analyse professors' expectations about online education and relate them to student academic performance during the COV-ID-19 pandemic, and considering the socio-demographic, entry, and prior university performance variables of students. During the beginning of the first semester in 2020, all the professors at a university in the south of Chile were invited to participate in the study (Lobos Peña et al., 2021). The research team obtained information about expectations relating to online education during the COVID-19 pandemic from 546 professors (54.8% men and 45.2% women), with an average age of 46.41 years. At the end of the academic period, 382 of these professors (57.6% men and 42.4% women) were identified as having taken courses during the first semester for a total of 14,838 university students. Professors' expectations and their previous experience of online courses were obtained, and the students' academic information was obtained. A questionnaire examining the Expectations toward Virtual Education in Higher Education for Professors was used. 84.9% of the professors were considered to have moderate to high skills for online courses. Differences in expectations were found according to the professors' training level. The professors' self-efficacy for online education, institutional engagement, and academic planning had the highest scores. The expectations of professors did not directly change the academic performance of students; however, a moderating effect of professor's expectations was identified in the previous student academic performance relationship on their current academic performance.

Theory on the expectations of professors, also known as the Pygmalion effect, was presented by Rosenthal and Jacobson (1968), these authors demonstrated that student



performance was influenced by teacher expectations. This finding was the beginning of several studies that observed the effect of teacher expectations on the academic performance of their students. The expectations of professors are defined as the beliefs or assumptions that teachers make about the general levels of behavior and performance of students during their training process (Rubie-Davies, Hattie, Hamilton, 2006).

For many students, pandemic transition process has been negatively assessed (Garris, Fleck, 2020). A study analyzing the impact of COVID–19 in 30,383 university students in 62 countries indicated that students were primarily concerned about issues related to their future careers and studies, experienced boredom, anxiety, and frustration, and that connectivity difficulty and perceived increased workload prevented them from maintaining and improving their academic performance. Additionally, during the transition process to online education, over 53% of the students were satisfied with the support provided by professors and universities, mainly in Oceania, North America, and Europe (Aristovnik et al., 2020).

According to the results (Lobos Peña et al., 2021), it can be affirmed that the dimension of teaching self-efficacy for online education, followed by the dimension of institutional engagement and academic planning, were the dimensions that received the highest score, that is, that professors in these cases present positive expectations about these elements. However, it was observed that the dimension of interaction with students received the lowest score. The results identified generally positive expectations for online education in educators during the COVID–19 pandemic. Positive expectations were identified in the professors' self-efficacy for online education, that is, professors' belief in their ability to teach online. This is followed by the dimension of institutional engagement, which evaluates the university's ability to provide technological and pedagogical support to address delivery of subjects and academic planning, a dimension referred to the expectations in communicating and developing the subject according to the planning.

As regards effects of previous experiences teaching online courses on professors' expectations authors found an effect of training in virtual education, where untrained professors had lower expectations than trained ones. It is important to consider this finding during the transition to online education in the COVID–19 pandemic, and training educators in online learning environments contributes to the quality of teaching planning and facilitation. Training provides professors with the opportunity to strengthen their skills and knowledge to drive learning within virtual environments.

With respect to linking professor expectations to their students, the results did not identify relationships between professors' expectations and their students' current academic performance. It seems that the student's academic performance is a variable that is more related to elements of the student, such as motivational factors like academic self-efficacy, self-regulation in learning, and effort regulation, etc. (Richardson,



Abraham, Bond, 2012). It was expected to find differences in the importance of the dimensions of teaching expectations in the prediction of student performance and so it was possible to identify how the different dimensions of the teaching expectations independently moderate the relationship between the previous academic performance of students and current academic performance. This finding is related to the results presented by Adnan and Anwar (2020), who argue that, due to the pandemic and its consequences, the academic performance of college students has been affected by multiple factors, including educator-related factors.

It has been recognised that the impact of the COVID-19 pandemic on men and women is different. This is no different in Higher Education. With the closure of schools and pre-schools, women with children were faced with a sudden increase in childcare responsibilities and household labour (Yildirim, Eslen-Ziya, 2020). Domestic roles and responsibilities appear to become less defined, the boundary between home and work became increasingly blurred (Alon et al., 2020; Cui, Ding, Zhu, 2020; Yildirim, Eslen-Ziya, 2020). Household living spaces were transformed into places of learning, childcare, and work (Clark et al., 2020). There are indications that divisions widened during the COVID-19 pandemic. Already faced with the burden of educating children coupled with their own employment, saw a sudden increase of childcare responsibilities and household labour forced by the lockdown. This created work/family conflict and was more apparent to women (Alon et al., 2020; Biroli et al., 2020; Carlson, Petts, Pepin, 2020; Costoya et al., 2020; Power, 2020). This is likely to have led to a decrease in engagement with paid employment, necessitating that woman increase their overall workloads to meet these emerging demands (Wang, Inoue, 2020; Yildirim, Eslen-Ziya, 2020). Gender inequality within the household is not a new concept, it is often noted as being two-fold, historically known as the double burden (Hochschild, Machung, 2012). Studies indicate that having children is an important precursor to changes in workload (Yildirim, Eslen-Ziya, 2020). The impact is wide-reaching, leading to a decrease in psychological wellbeing and health difficulties, as well as limiting career development and progression (Blau, DeVaro, 2007).

The COVID-19 pandemic led to an increase in women as the main care provider alongside and to some extent created by working from home as an employee. This included women as the main provider of childcare, including the provision of home-schooling in real-time adding to the burden. Women primarily undertake domestic chores, such as cooking and cleaning, tasks which are more intense during the lockdown period due to increased occupancy in the home (Aldossari, Chaudhry, 2021). The COVID-19 pandemic has accelerated change in working practices such that the volume of work rapidly increasing. In Higher Education for example, teaching and learning activities had to be taken rapidly online, which required additional training to learn the use of new technologies relevant to remote teaching. In addition, teaching pedagogies also



had to be adapted to facilitate remote learning which also contributed to the volume of work rapidly increasing.

Research conducted by Yildirim and Eslen-Ziya (2020) demonstrated that the day-to-day routine of female academics with children was disproportionately affected by the COVID–19 pandemic. In addition, women with children are academically less productive than men (Collins et al., 2020; Lutter, Schröder, 2020). This could relate to the conflict between the demands of both roles, where women must prioritise childcare. In family units with children, where the man is the main financial provider, the women is expected to undertake additional roles that the man cannot. Arguably, the COVID–19 pandemic has required an increase in the need for 'caring' work which Hochschild argues is more likely to be undertaken by women (Hochschild, 2012). This may have placed an additional burden, as this work is allocated or delegated disproportionately to female members of staff (Hochschild, 2012). COVID–19 has been at the top of Higher Education agendas for the last 12 months. Although there are established policies promoting gender equality, these have been deprioritised. This may not have been a conscious decision, but time, energy and resources have been diverted (Yildirim, Eslen-Ziya, 2020).

The research of Augustus (2021) explores whether the advent of COVID–19 pandemic and the resultant changes to working practices have exacerbated these existing gender inequalities. The author examines three key factors that led to a disproportionate impact on women working in academia, relative to men. These three key factors focus on the roles and responsibilities of the transition of education to remote learning, development opportunities, including career progression and the gendered division of labour, including caring responsibilities (see Figure 2).

The findings indicate the gender gap in the context of domestic tasks and factors that may influence career development. Further research is required into the long-term consequences of the COVID–19 pandemic on women working in higher education. This is limited to a comparison of men and women, pre and post COVID–19, further work should be carried out to understand the effect on other groups and importantly, intersectionality. This work should for example aim to understand the impact on single sex or trans parents. Further work also needs to be carried out to understand the level of disadvantage that motherhood places within Higher Education relative to other groups.

Therefore, moving forward Higher Education employers must consider the impact of the COVID–19 pandemic on women with childcare responsibilities (Nash, Churchill, 2020). Higher Education employers must ensure maximum flexibility for staff in terms of when and how work is undertaken. This may help women to restructure the time when work is undertaken and allow that to be weaved in between childcare tasks. Given that this paper concludes that the overall workload of women has increased, they must be able to contribute by working outside of traditional working hours and locations,



with all of the associated patriarchal connotations. In their internal communication strategies Higher Education employers should strive to create a culture where nonstandard working hours and locations are accepted, embracing new ways of working. This should perpetuate cultural change away from the traditional concept of working hours which by its nature disadvantages women who are having to provide childcare. More work is needed in this area to ensure that initiatives, whilst well intended, deliver. Higher Education employers should undertake equality impact assessments both prior to and importantly after such initiatives are put in place.



Figure 2. Key factors of disproportion impact on women in academia Source: own processing based on Augustus, 2021.

At the end of the review, we present study which aimed to understand how the COV-ID–19 pandemic (with its subsequent lockdowns and isolation bubbles) affected academics at a New Zealand university in Auckland, with regards to their transition to emergency remote teaching (Erlam et al., 2021). This included respondents from four schools within a Science and Health Faculty. A total of 497 academic staff employed across the faculty and were invited to participate in the study Specifically, it explores the personal, social, institutional, and student-related challenges experienced during the transition as well as identifying the emerging benefits during the accelerated transition.

Overall categories of impact were developed to give a clearer structure and intent to the survey. The categories included six sections. In the first five sections, respondents were asked to rate items in order of importance and respond to Likert-scale questions. Section one addressed demographics (e.g. age, ethnicity, school affiliated with, years of tertiary teaching experience. Section two addressed communication issues as the lockdown unfolded (e.g. most challenging and most beneficial communications



from university during lockdown). Section three addressed resources related to Information Technology (IT) available to educators as well as the speed and type of Internet access. Section four addressed issues emerging when working from home and online (e.g. available quiet space, access to technology, digital competence). Section five focused on academic experiences while teaching remotely. Finally, section six focused on how the university might look in the future. This section contained five questions which allowed for open-text responses.

This research has brought to the fore a need to consider strategies to sustain learning and teaching even during challenging times. Reiterating the words of one of the respondents, "We need to learn to do this better." This research has provided an opportunity to consider staff responses and responsiveness during challenging times. Noted is an interruption to the assumed roles of learners and educators, with educators also embracing new learning opportunities. The university as a learning organization needs to consider sustainability by nurturing future possibilities in online and remote teaching and learning contexts.

Major challenges experienced included miscommunication from the university, concerns about student access to technology, finding a quiet space to work, lack of digital competence skills, too much screen-time, managing work hours, and work/life balance. Benefits included enhanced flexibility, enhanced teacher creativity, increasing autonomy of learners, and reduced commute time. Focusing to the future, academic staff desired future teaching to include blended learning and virtual immersion. New strategies of working remotely are being explored to facilitate teaching and learning while catering to the preferences and skills of both educators and students. Our findings honour the considerable agility of academic staff who sought to sustain and enhance excellence in remote education. At an institutional level our findings point to the need for staff to be supported by their institutions as they further refine their work within new-found spaces.

Despite the challenges of emergency remote teaching, HE instructors are in a privileged position compared with most of their counterparts teaching at lower levels of education, as the education level handled has already turned out to be a significant predictor of coping and engagement (Jelinska, Paradowski, 2021b). The post-pandemic world may see the trend of classes becoming more blended (Bozkurt, 2019; Kim, 2020), integrating conventional face-to-face instruction with online learning (Garrison, Kanuka, 2004; Dziuban et al., 2018). The "new normal" will hopefully remove most of the current stressors, but awareness of the variables influencing teacher coping and well-being will be nonetheless useful to both teachers and students.

We hope that the results of these research contribute to a better understanding of the impact of the pandemic and emergency remote instruction on college and university instructors' well-being by explaining the mechanisms mediating the relationship between individual, contextual, and affective variables.



4. Specifics of the labour market and the nature of work of university teachers in the V4 countries

This part of the monograph is dedicated for the basic description of academia environment and labour market specifics of university teachers in V4 countries. To interpret correctly data on time allocation and consequently of well-being, it is necessary to understand specifics of every particular country. Geographical location (Miller, 2018) as well as culture and traditions (Metcalfe et al., 2008; Voicu, Voicu, Strapcova, 2009) also play an important role in time allocation, especially in relation to the notion of the traditional division of labour between men and women. This is the reason, why authors depict basic information about the university teachers' labour market in all 4 countries of V4. Besides that, authors also provide more general overview of teachers' labour market specifics.

4.1. Specifics of university teachers' labour market – global perspective

There are not many studies focusing on the labour market of university teachers. It is an opposite situation to labour market of graduates, or preparation during the university study for the active participation at the labour market.

We will focus on the university teachers' labour market based on the content analysis of the published studies, from 2004 till the present. Reason for starting with 2004 is the fact, that all V4 became members of the European Union in May 2004, what significantly also influenced the teachers labour market. Specifics of university teachers labour market are mostly those, which influence labour market equilibrium.

Chevalier and Dolton (2004) published a study focusing on the labour market of teachers in England (however, teachers in general, not only university teachers). They pointed, that labour market of teachers is worthy of attention because of:

- 1) the size of teachers' labour market,
- 2) effect of teachers on children's human capital acquisition,
- 3) effect on voter satisfaction.

They also identified specifics of teachers' labour market in England, as following:

- 1) state has monopoly power in the provision of credentials,
- 2) state has nearly monopsony power in the recruitment of teachers (public schools),
- 3) teaching is a highly unionised occupation where salaries are settled on a nationally agreed pay scale,



4) teaching is mostly a female occupation, which adds some further difficulties to the modelling of teacher's supply.

The biggest problems on teachers' labour market are the recurrent crises in the recruitment and especially the retention of teachers. Bauder (2005) focused on segmentation of academia labour market in Canada. He found that academia is increasingly driven by economic forces, However, we see little evidence that the academic labour market is driven by a mysterious invisible hand of the market. He pointed to the following problems (eventually specifics) of academia labour market:

- 1) faculty salaries declined relative to total expenditures of universities, from more than 31 percent in the late 1970s to roughly 19 percent in 2004,
- 2) change of faculty-student ratio (in the 1992–1993 academic year there were on average only 18.8 full-time students for every full-time faculty member, eleven years later there were 23.7),
- the segmentation of the academic labour market is gendered (however, opposite situation than in V4 countries – data for 2003–2004 collected by CAUT indicate that across all disciplines, only 18.1 percent of full professors are female; nonprofessors' 54.2 percent are women),
- 4) qualification requirements are extremely high: usually an earned doctorate, or at least doctoral candidacy,
- 5) academia serves as a symbolic economy, in which academic performance assumes a symbolic value that is worth little in other occupations,
- 6) competition does not exist uniformly across the entire academic labour market.

Passaretta, Trivellato, and Triventi (2019) focused on the occupational outcomes of PhD graduates in Italy. They pointed to changes in academia regulation (mostly cuts to public funding, introduction of fixed-term positions for assistant professors) and the economic crisis. Their study summed up, that the academic reforms reduced the chances to work in academia more in soft rather than in hard academic disciplines.

Musselin (2009) focused on the regulation of the academia in Germany, France, the USA. Beside other topics, his study points also to the specifics of division and allocation of work of academic staff. He suggests that:

- 1) academic activities are specific; they are neither strongly formalized nor standardized,
- 2) academic activities are closer to an "intellectual" craft, each "product" (a course, a paper, or a research project) being conducted from the beginning to the end by one person or by a small group frequently composed of a team leader and a few subordinates,
- 3) the division of work is not formally structured,
- 4) the contrast in terms of division and allocation of work between the primary and the secondary labour markets is stronger than within each of them,



- 5) contents as well as the scope of work of the less secure positions (secondary labour market) are most of the time focused on only one aspect of academic work (adjuncts for instance only have teaching assignments while post-docs are generally dedicated to research only),
- 6) what influences the division of work of permanent academia staff is: the status, the institutional hierarchy, and self-regulation.

Musselin (2009) also pointed to the features of academia labour market. Among them, the most important are:

- 1. Co-existence of segmented academic labour-markets (primary labour markets on the one hand, which is represented by permanent staff, and rather stable academic positions; and secondary labour market on the other hand, which is represented by different types of time-limited positions, including doctoral students, research fellows, adjuncts, or part-time teachers). In Germany for instance, non-professor positions are for a limited time, assistants depend on professors who recruit them, define their research programs and teaching duties and act as their employers.
- 2. Limited methods of financing (in Germany, the introduction of merit-salaries is recent and before the 2002 act, there was no possibility for the universities to reward or sanction their staff). In France, some bonuses were introduced by the beginning of the 90s (but they are rather narrowly regulated and do not allow much leeway in each institution) and universities can decide for some promotions).
- 3. Academic work is controlled assessment, control and reward of academic work are at the crossroads of three forms of regulation (the organisation, the market, and the profession). As stated by author, professional control is now weaker while institutional control is on the increase. Example of still existing professional control is that a control by peers relies partly on organised tests (épreuves) and partly on procedures (e.g. recruitment, submission of papers to a journal for review etc.).
- 4. Affiliation to a collective entity it is linked with a permanently arising question, whether academia staff are single players in a competitive market, members of a professional group, or individuals committed to their institution? The negotiation of material and human resources during the recruitment process implies a contract through which the institution provides professors with resources allowing them to develop their research while the professors in exchange agree to participate in the administration of the university and show institutional loyalty. The institution 'bets' on the professor and expects a return on investment. Change in the nature of the links between universities and academics and trends in employer–employee relationships will affect not only academic identities but also practices, because it also transforms academic activities into academic work.



Paye (2012) focused in on the teaching – research nexus in British universities. He pointed that There is limited knowledge on how and why certain individuals end up in teaching posts, others in research posts and others on more traditional posts, performing both. This significantly influenced university staff labour market. Currie, Harris, and Thiele (2000, p. 269) pointed that "increasingly economistic and managerial ethos, which surrounds university life," have caused that academic jobs have become more demanding in terms of effort, as well as time. With growing institutional demands and accountability and work intensification a 50 or 60 hours per week workload became the norm in many universities (Jacobs, Winslow, 2004).

Gill (2016) pointed to other negative trends in the academia labour market in the US. They are:

- precariousness particularly, but not exclusively, for younger or "career early" staff; as he stated, while, in the past, short-term contracts were largely limited to research positions and tied to specific, time-limited projects, today they also characterise teaching posts which are frequently offered on a one-year temporary basis at the bottom of the pay scale;
- 2) intensification of academia work, and in some way also punishing intensification of work (event the staff work overtime, it is not officially recorded and valued);
- marked extensification across time and space work in today's universities is, "academia without walls"; this is the outcome of multiple determinants but is facilitated by information and communication technologies that render it possible to be "always on".

One of the most recent studies focuses on the permanent contracts and job satisfaction in academia, from the European countries' perspective (Castellacci, Viñas-Bardolet, 2021). Authors pointed to the fact, that temporary contracts are increasingly used in academia, what is linked with a weak job security. They also raised an interesting question, whether the permanent contracts contribute to support researchers' well-being? To answer the question, they stressed following idea: "if the increasing use of temporary forms of employment will end up weakening job security and worsening career prospects for non-tenured academics, many of these may well decide to leave academia and get a job some-where else. If so, the public science system will progressively become a less attractive sector of employment for many young talents, and thus weaken its quality, performance and competitiveness in the longer run".



4.2. Teachers' labour market in V4 countries

There are not many relevant statistics focusing on the university teachers labour market in V4 countries. To get, at least rough, overview about the situation in V4 countries, we summarised data from the *Survey on Researchers in European Higher Education Institutions* (2017). The survey focused on a survey of researchers currently working in the EU (and EFTA) in higher education institutions (further in the text referred as HEI) regarding their mobility patterns, career paths, employment and working conditions. For the study, a researcher is defined in accordance with the Frascati manual as "professionals engaged in the conception or creation of new knowledge, conducting research and improving or developing concepts, theories, models, techniques instrumentation, software or operational methods". The research sample was identified by fulfilling following criteria:

- 1) carrying out research, or
- 2) supervising research, or
- 3) improving or developing new products/processes/services, or

4) supervising the improvement or development of new products/processes/services. Following groups of fields of sciences were analysed:

- 1) NATURAL: Natural Sciences and Engineering and Technology,
- 2) HEALTH: Medical and health sciences and Agricultural and veterinary sciences,
- 3) SOCIAL: Social Sciences and Humanities and the Arts.

These four career stages were recognised:

R1: First Stage Researcher (up to the point of PhD).

R2: Recognised Researcher (PhD holders or equivalent who are not yet fully independent).

R3: Established Researcher (researchers who have developed a level of independence). R4: Leading Researcher (researchers leading their research area or field.

In the following text, we present basic results of the study linked with V4 countries:

- 1. Gendered perspective in Slovakia and Poland, higher shares of women participated in the survey than on average in the EU28 countries (we can just suggest, that more women work in HEI than men in Slovakia and Poland). Czech Republic is one of those countries with the largest negative change of women proportion in HEI from 2012 (-6.5%).
- 2. Income/remuneration/financial security financial security and remuneration is an important aspect of working conditions – in Slovakia, only 32% and in Hungary only 34% of researchers feel well or at least reasonably paid. In Slovakia, the share of researchers unsatisfied with their remuneration decreases with higher career stages.



The table 5 shows answers (paid only sufficiently or badly paid) in V4 countries, based on career stage.

Country	R1	R2	R3	R4
Czech Republic	NA	63.0	44.8	47.7
Hungary	74.8	57.8	63.7	68.9
Poland	NA	49.7	54.2	35.5
Slovakia	54.7	74.4	72.3	58.7

Table 5. Sufficiently or badly paid researchers in V4 countries (in %)

Source: own processing.

3. Job security, pension plan and social security.

The table 6 shows answers linked with individual satisfaction with job and social security attributes in V4 countries.

Table 6. Satisfaction of researchers from V4 countries with job security, pension plans, social security

Country	Job Security	Pension Plan	Social Security
Czech Republic	0.37	0.36	0.21
Hungary	0.93	0.72	0.71
Poland	0.30	0.32	0.25
Slovakia	0.73	0.65	0.68

Source: own processing.

The table illustrate the distance from the country with the highest share of satisfaction; 0 = country with highest share; 1 = country with lowest share.

In Poland, higher education institution researchers are the most satisfied from V4 countries. Only in case of social security, researchers from Czech Republic are the most satisfied. On the other hand, researchers in Hungary, followed by researchers from Slovakia are the least satisfied.

4. Switching to another field of research during the career (as part of interdisciplinary mobility). Interdisciplinary mobility is perceived controversially – only about 70% of those actively participating in interdisciplinary mobility considered it as positive for their career. In the Table 7, there are data on the percentage of higher education institutions researchers who have switched to another field of research within their career.



Country	Percentage (%)
Czech Republic	27.9
Hungary	44.0
Poland	28.3
Slovakia	41.3

Table 7. Percentage of researchers from V4 countries switching to another field of research

Source: own processing.

It is interesting, that the highest ratio of researchers has switched to another field of research in Hungary and Slovakia, as these are also countries with the lowest level of satisfaction with job and social security. We can conclude that low levels of job and social security satisfaction cause job dissatisfaction and hence increased levels of researcher turnover. However, it may also imply an inability to keep a job (due to low job security) and consequently the need for researchers to adapt to the conditions in their new job, including switching to a different area of research. Poland and the Czech Republic are more stable in this respect – researchers' higher satisfaction with job and social security allows them to develop their chosen research area without having to change it during their career.

Other data subscribing the teachers' labour market specifics are processed based on the Eurostat databases. In the Tables 8 and 9, we provide information about the development of the ratio of students to academic staff, and number of academic staff. Because of the availability of data, we provide information only until 2019.

Data in the Table 8 focuses on the students to academic staff ratio, also in comparison to EU 37 countries.

	2013	2014	2015	2016	2017	2018	2019
EU 27	_	15.4	15.4	15.1	15.3	_	-
Czechia	21.9	22.3	23.3	18.9	18.4	15.0	16.8
Hungary	14.8	15.1	14.6	13.7	12.1	11.5	11.4
Poland	15.1	15.2	14.9	14.6	14.3	13.8	13.5
Slovakia	13.8	13.7	13.0	15.1	11.9	11.4	11.3

Table 8. Students to academic staff ratio in V4 countries in 2013–2019 (in %)

Source: own elaboration based on Eurostat data.

In all 4 countries, the students to teacher ratio dropped significantly from 2013 to 2019. In Czech Republic, students to teacher ratio is the highest from all V4 countries (16.8 in 2019). Situation in Slovakia and Hungary is almost the same; in 2019 the ratio was 11.3 (11.4 respectively). On the one hand, a declining student to teacher ratio may indicate an effort to improve the quality of education. On the other hand, it may



indicate a declining number of students which is not reflected in the number of university teachers. Looking at data on the number of academic staff (Table 9), for example in Slovakia number of teachers dropped, however only slightly. We supposed that dropping students to teacher ratio in Slovakia (with the relatively stable number of teachers) means, that number of students has decreased significantly.

	2013	2014	2015	2016	2017	2018	2019
EU 27	-	1,199,407	1,274,685	_	-	_	-
Czechia	-	-	-	-	-	-	-
Hungary	23,674	21,778	21,045	21,705	24,119	25,184	25,174
Poland	102,827	99,918	97,413	-	-	-	-
Slovakia	12,832	12,798	12,767	12,425	12,204	12,101	12,004

Table 9. Academic staff (tertiary education) in V4 countries in 2013–2019

Source: own elaboration based on Eurostat data.

In the absence of data for the Czech Republic and partly for Poland, it is difficult to assess this area for these countries. In Hungary, on the contrary, the number of university teachers has been increasing since 2013. Which, with a decreasing student to teacher ratio may mean that employment in higher education is increasing. Such a situation may be favourable in the short term, but it is questionable to what extent such a ratio is sustainable in the long term. However, it is questionable to what extent it is possible to maintain a relatively stable number of teachers in the face of a significant decline in student enrolment. It appears that these countries will have to undergo a transformation process in higher education soon and adjust the number of university teachers to the declining number of students (or increase the attractiveness of universities and attract not only domestic but also foreign students). From 2018, new legal act on Act on Quality Assurance in Higher Education (act No. 269/2018 Coll.) is efficient in Slovakia. Based on this act (and other relevant legislation), all higher education institutions in Slovakia undergone extensive process of accreditation (in 2022, the process is still in progress).

More detailed descriptions of the labour market of university teachers and special conditions of teaching at the higher education institutions in all four V4 countries are provided in the following subsections.



4.3. Specifics of teachers' labour market in Slovakia

In this sub-section, we focus on the characteristics of the teachers' labour market in Slovakia. Firstly, we provide an insight into the Slovak system of higher education. Consequently, the characteristics of higher education are provided.

4.3.1. Overview of Slovak higher education system

In Slovakia, three types of higher education institutions can be established - public, private and state (act No. 131/2002 on higher education as amended). A public university is a public and self-governing institution that is established and dissolved by law. The law shall also provide its name, classification, and seat. If a public higher education institution is divided into faculties, these faculties shall be established at the same time as the institution is established. In 2022, there are 20 public higher education institutions in Slovakia. A private higher education institution is a legal entity with its seat in the Slovak Republic or with its seat in the territory of a Member State, which has been established or founded for education and research and is entitled to operate as a private higher education institution if the Government has granted it consent to do so on behalf of the State pursuant to a special regulation. In 2022, there are 10 private higher education institutions in Slovakia. In Slovakia, there are three state higher education institutions, namely the military higher education institution, the police higher education institution, and the medical higher education institution. The military higher education institution educates professionals mainly for the armed forces of the Slovak Republic. Police higher education institution educates professionals mainly for the Police Corps. Medical higher education institution educates students who are preparing for particular health professions. Besides higher education institutions established under the Slovak law, there are also foreign higher education institutions located in Slovakia (in 2022, there is 8 foreign institutions). In the Table 10, there are basic information about the higher education institutions in Slovakia (because of the availability of data, we provide information until 2020). Foreign institutions are not included in the table.

	2015	2016	2017	2018	2019	2020
Higher educ. institutions	35	35	34	34	33	33
Faculties	129	129	128	128	127	128
Students	118,856	112,092	106,967	105,258	105,393	108,742
Students of Slovak nationality	113,211	105,688	99,184	95,830	94,121	96,003

Table 10. Higher education institutions in Slovakia



	2015	2016	2017	2018	2019	2020
Students of Slovak nationality – women	66,656	62,157	58,274	55,997	54,627	55,406
Graduates	38,271	37,407	34,504	31,297	30,804	29,495
PHD study (total)	8,220	7,404	7,674	6,071	6,600	6,582
Professors and associated professors	4,233	4,172	4,162	4,163	4,117	3,708
Academia staff (pedagogical staff) (total)	10,551	10,490	9,154	10,036	9,897	9,015

Source: own processing based on data from Statistical office of SR.

Between 2015 and 2020, there has been a significant decline in the number of students, with a relatively stable number of higher education institutions and their faculties. The most significant decline in students was recorded in 2018 and 2019. In 2020, the number of students increased slightly. This increase is considered to be, among other things, a consequence of the COVID–19 pandemic, as it forced some students who would otherwise have preferred to study abroad to choose a university in Slovakia. The years 2020 and 2021 were also a period when most universities in Slovakia admitted students without entrance examinations, based only on their results in high school. Therefore, it will be interesting to follow the further trend in the development of the number of students, both in 2021 and in 2022, when admission exams are again being resumed at universities (however, it should be added here that 2022 will again be a non-standard year in terms of the number of students admitted, due to the increased interest of Ukrainian applicants in studying).

There has been a slight increase in the number of international students in the period under review (their share in 2015 was less than 5%; in 2020 it was more than 12%). In terms of gender, female students dominate among Slovak students (their share in the total number of students was stable throughout the period, at around 57.5–58.5%).

It is interesting to note that not only the number of students but also the number of graduates decreased during the period under review. This was visible even in 2020 (when there was already an increase in the number of students). However, it is logical that the increased number of students will only be reflected in the number of graduates after a certain period of time (bachelor's degree lasts 3 years, master's degree another 2 years). The decrease in students is probably also related to the continuous decrease in the number of university teachers. Both professors and associate professors, as well as other university teachers. In addition to the lower number of students, this trend will continue in 2021 and 2022. In addition to the lower number of students, it is influenced by the insufficient funding of public universities from the state budget and the ongoing process of aligning the quality of study programmes at universities with the newly set quality standards. According to the Slovak Rectors' Conference, the Slovak Accreditation Agency for Higher Education published the text of the expected standards for quality assurance in higher education on 2 July 2020. The standards were approved



by the agency's executive board and will be valid from 1 September 2020. Universities are obliged to align their internal system with the Standards for Internal Quality Assurance System in Higher Education by 31 August 2022 (www.srk.sk).

Besides the state budget, higher education institutions are allowed to obtain sources also from the national fundings. As stated by Lesková and Šipikal (2019), model of financing higher education institutions is based on performance indicators. To stimulate their effort, higher education institutions have also a possibility to receive financial sources trough a competitive project mechanism established in the country. This includes three research agencies, namely the Scientific Grant Agency, the Cultural and Education Grant Agency, and the Slovak Research and Development Agency. All three reallocate the funds given by the Ministry of Education, Science, Research and Sport.

Higher education institutions in Slovakia are specific not only regarding their forms and financing, but also regarding specific form of concluding employment contracts between the institution and teachers.

4.3.2. Specifics of employment contracts of higher education teachers in Slovakia

Relationships between the employer and employee are regulated by act No. 311/2001 Coll. Labour Code in Slovakia. Based on the Labour Code, employment relationship can be concluded either for the definite period, or for indefinite term. Employment relationship for the indefinite term is considered as the most secure form of employment.

Although in Slovakia, as a rule, employment contracts of indefinite term are increasingly being concluded, the field of higher education is regulated separately (primarily by the Act No. 131/2002 on Higher Education, and only in a subsidiary way by the Labour Code). As a result of various factors, such as the decline in the number of students, the desire not to increase student to teacher ratio, the lack of resources from the state budget to cover salary costs, etc., indefinite-term contracts are becoming increasingly rare and are being replaced by atypical forms, namely fixed-term employment contracts. The recruitment of university teachers is specifically regulated by Act 131/2002 Coll. on Higher Education and by Section 48 of the Labour Code 311/2001 Coll., paragraph 6. According to Section 77(5) of the Higher Education Act, the employment contract for the post of university teacher may be concluded based on a single selection procedure for a maximum period of five years. The duration of the employment relationship shall be extended by the duration of the university teacher's maternity and parental leave and the university teacher's temporary incapacity for work of at least 42 days. The post of associate professor or the post of professor may be occupied based on a single selection procedure for a maximum period of five years. If a university teacher has



held the post of associate professor or the post of full professor for at least the third time and the total duration of his/her service in these posts has reached at least nine years, he/she shall acquire the right to an employment contract with that university for the post of university teacher for a fixed period until the age of 70.

This puts university teachers at a considerable disadvantage compared with employees in the private sector (who cannot have a fixed-term contract for more than two years). This is associated with lower teacher satisfaction and higher dissatisfaction with both job and social security. This fact also explains the results found in the V4 cross-country comparison (Tables 6 and 7).

Despite the growing uncertainty in the higher education environment, this field remains an attractive part of the labour market in Slovakia. In 2019, there were 14062 employees working in all higher education institutions in Slovakia (Higher Education Portal, n.d.). However, this number includes all employees, not only teachers (i.e. also researchers, administrative staff, technical and support staff, including student house staff). Of the total number of staff, 29.6% were aged between 40 and 49. This was followed by the group of staff aged between 30 and 39 (23.89%). Staff aged 50 to 59 and 60 to 69 accounted for approximately the same proportion of the total number of staff, at 18.23% and 18.8% respectively. Surprisingly, the youngest group of employees, aged up to 29 years, accounted for the lowest share (1.74%). In terms of gender, there are more men (52.99%) than women (47.01%) working in higher education institutions in Slovakia. There are more men in all age groups except the youngest (under 29) and the 50-59 age group. This gender composition of higher education employees is surprising, especially in view of the instability of employment (impossibility or difficulty of concluding employment contracts of indefinite length). It is also interesting to note that as many as 26.55% of employees in higher education are of retirement age (or close to retirement age), i.e. in the 60–69 age group and the over-70 age group. Higher education thus represents one of the few areas of the national economy in which employees of post-retirement age are active on the labour market. The composition of the higher education workforce in 2019, divided by age group and gender, is shown in Graph 1.




Graph 1. Higher education institutions staff in Slovakia in 2019 by age groups and gender Source: own processing based on data from Higher Education Portal, n.d.

4.4. Specifics of teachers' labour market in Poland

In this chapter, the basic information about the labour market in Poland (from the general point of view) are presented. This section also includes a description of the work of teachers in Poland.

4.4.1. The Polish labour market – general characteristics

In order to determine the condition of the labour market, many different indicators are used, among which the most commonly used indicator is the unemployment rate, which determines the amount of unemployment. In the Graph 2, the development of the unemployment rate in Poland from 2010 to 2021 is displayed. Detailed data on registered unemployment rate, on a monthly basis, are displayed in annex 1.

Graph 2 present data on the level of unemployment in Poland over the last decade. The unemployment rate calculated according to two different methods is presented:

 the registered unemployment rate – the method of determining the unemployment level is closely related to the registration of the unemployed in district labour offices, i.e. data on the number and structure of the unemployed come from the statistical reporting of labour offices (Janukowicz, 2010, p. 18);



2) unemployment rate according to the Polish Labour Force Survey (LFS) – this survey has been conducted in Poland since May 1992 in accordance with the methodology of the International Labour Organization (ILO), every quarter by the Central Statistical Office; the survey consists in surveying a nationwide sample of households; it is a specific panel survey, in which 1/4 of the sample is changed in each subsequent wave of the survey (the so-called rotational panel); the survey is consistent with ILO methodology, which ensures comparability of the obtained data on an international scale, which is not ensured by registered unemployment statistics (Janukowicz, 2010, p. 19).



Unemployment rate: Polish Labour Force Survey for 2021 - data not available

Graph 2. Unemployment rate in Poland in 2010–2021 Source: own elaboration based on the Statistics Poland data – Local Data Bank, Central Statistical Office.

It is worth adding that the basic source of differences between values of both rates is, first of all, a different definition of an unemployed person adopted in both methods (Milewski, Kwiatkowski, 2006, p. 393). In the case of registered unemployment, the definition of an unemployed person results from the Act on employment promotion and labour market institutions of 20 April 2004 (Journal of Laws, No. 99, position 1001 as amended), whereas in the case of unemployment according to LSF it is consistent with ILO guidelines (*Unemployment rate*, n.d.).

Analysis of the data summarised in graph 1 and annex 1 shows that in the last decade both the registered unemployment rate and unemployment measured by the Polish Labour Force Survey recorded a declining trend from 2014 until 2019, i.e. the year before the outbreak of the COVID–19 pandemic. In the first year of the pandemic,



the level of unemployment increased, although the increase was not drastic. In 2021, the registered unemployment rate decreased slightly (Graph 2).

The unemployment rate varies strongly according to the level of education. It is lowest among those with tertiary education – ISCED 5.6 (Graph 3).



Graph 3. Unemployment rate in Poland by education level (2011–2020) Source: own elaboration based on the Statistics Poland data – Local Data Bank, Central Statistical Office.

In the last decade, the wages in Poland have gradually increased (Table 11).

	2010	2020
Average monthly gross wage and salary in total in PLN	3,224.13	5,167.47
Public sector	3,757.86	5,900.60
Private sector	2,952.38	5,013.54
Average monthly	gross wage and salary	
In total — pr	revious year =100	
Nominal	103.9	105.0
Real	101.4	101.7

Table 11. Wages and salaries in Poland in 2010 and 2020

Source: Poland in Figures, 2021.

Over the past few years, the increase in wages has been faster than the increase in retirement (Graph 4).





Graph 4. Indices of average monthly real gross wages and salaries and retirement and other pensions Source: *Poland in Figures*, 2021.

Territorial differentiation of labour market in Poland

The labour market in Poland is very diverse. This diversification is influenced by the economic condition of the regions. The least economically developed part of Poland is generally its eastern part. The standard economical indictor to describe the economic growth is gross domestic product (GDP). In the Figure 3, GDP per capita in individual provinces in Poland in 2019 is presented. It is evident, that regions in the east part of Poland are the least developed.

As it is stressed in the literature, the regional differentiation in terms of the unemployment rate results, among others, from the different level of the social and economic development of the regions, uneven changes in the demand for labour, as well as different intensity of liquidated and privatised state enterprises in the transformation period. Taking into account the level of the socio-economic development, it should be stressed that the economically least developed part of Poland is generally its eastern part. The comparison of the average unemployment rate in particular voivodships of Poland shows that the eastern, economically less developed regions are characterised by a higher unemployment rate (Lubelskie, Podkarpackie, Świętokrzyskie) (Graph 5).









Graph 5. Unemployment rate in Poland by region (voivodships) in 2020 Source: Own processing based on the Eurostat data.



Demography

The Polish labour market is influenced by the demographic factor. In the 1990s and the first decade of the 21st century, the Polish economy lacked mainly capital, but not employees. In recent years, however, this situation has changed. The lack of employees is one of the most frequently declared barriers to the development of enterprises. As in other European countries, the problem is the aging of the population (Graph 6).



Graph 6. Population by economic age groups (as of 31st December) Source: own elaboration based on *Poland in Figures*, 2021.

Forecasts for the future is that the percentage of people in post-working age will increase significantly, while the percentage of people in pre-working age will decrease.

The Polish labour market during the COVID-19 pandemic

For the analysis of the level of unemployment in Poland during the COVID–19 pandemic, the registered unemployment rate was used since, based on monthly statistics from labour offices, this indicator shows more clearly the monthly fluctuations occurring during the pandemic than the unemployment rate according to the LFS. Table 12 shows the trend in the unemployment rate for each month of 2019, 2020 and 2021

In March 2020, labour offices did not record increased registrations of unemployed persons despite the ongoing outbreak of coronavirus. This may have been the result of postponing decisions on redundancies due to uncertainty about the duration of the epidemic. At the end of March 2020, compared to the end of February 2020, the number of unemployed decreased by 0.1%. In April 2020, the steady downward



trend in unemployment observed over the years in that month, caused by the seasonal nature of unemployment, was disrupted. At the end of April 2020, compared to the previous month of the same year, the number of unemployed increased by 0.4%. The upward trend continued for the next two months (until June 2020), then remained at 6.1% in the following months until November 2020. After the December increase (to 6.3%), the level of unemployment began to fall gradually in the following months (Table 12).

Year/month	Jan	Feb	March	April	May	June	July	Aug	Sep	0ct	Nov	Dec
2021	6.5	6.6	6.4	6.3	6.1	6.0	5.9	5.8	5.6	5.5	5.4	5.4
2020	5.5	5.5	5.4	5.8	6.0	6.1	6.1	6.1	6.1	6.1	6.1	6.3
2019	6.1	6.1	5.9	5.6	5.4	5.3	5.2	5.2	5.1	5.0	5.1	5.2

Table 12. Register	ed unemployme	nt rate in Poland ir	n 2019–2021 (in %)
			· · · · ·

Source: own processing based on data from Central Statistical Office, Poland.

In turn, the observation of average employment in the enterprise sector in Poland in the years 2020–2021 shows that the first months (March, April 2020) of the pandemic in Poland were marked by a decline in production, employment, wages, and pessimism in terms of the economic situation. The following months brought an improvement in moods, an increase in employment and an increase in average wages (this concerned mainly the corporate sector). From the beginning of September 2020, the second wave of the COVID-19 epidemic swept through Poland, which, although much stronger (and more tragic) than the first, did not bring as many unfavourable changes in the economy as it did during the first "epidemic shock". A year after the announcement of the first epidemiological restrictions, Poland experienced the effects of the so-called third wave of the epidemic. Due to the growing number of infections in Poland, new restrictions were ordered. We are currently in the "fourth wave: a pandemic." Referring to the year of the pandemic in Poland, based on preliminary GUS data and research results, it can be concluded that the effects of the COVID-19 crisis in Poland in relation to the labour market seem to be less severe than initially estimated.

Polish labour market in the face of the fourth industrial revolution (Industry 4.0)

Industry 4.0 can be generally defined as a broad digitalisation, automation and robotisation of processes in enterprises through the implementation of advanced IT systems, the Industrial Internet of Things, data analytics and artificial intelligence (*Czwarta rewolucja przemysłowa...*, 2020; *Przemysł 5.0...*, n.d.). Industry 4.0 creates both potential opportunities and threats for employers, employees and entire economies. The fourth industrial revolution changes the labour market.



Research on the level of automation in Polish production plants proves that for the managers of Polish factories, the challenges of the third industrial revolution related to microelectronic technologies remain relevant to a large extent. An analysis of the degree of preparation of the Polish industry for the implementation of the Industry 4.0 concept, included in the ASTOR report, shows that:

- 1) only 15% of factories in Poland are fully automated and 76% partially automated,
- 2) only 6% of Polish enterprises introduced Industry 4.0,
- 3) the "Digital Poland" report prepared by McKinsey indicated a significantly lower degree of digitization of Poland in relation to the United States and Western Europe,
- 4) Poland's "digitization index" is 34% lower than in Western Europe,
- 5) additionally, McKinsey points out that the "digitization gaps" in relation to Western Europe in economic sectors such as "advanced industrial production" and "simple industrial production" are respectively: 45% and 78%.

Research on the level of automation in Polish production plants demonstrates that only 15% of factories are fully automated, and as many as 76% indicate partial automation.

According to the International Robotics Federation, the robotization density in Poland (the number of industrial robots per 10,000 employees) is 46 (Germany – 364, Slovakia – 169, Czech Republic – 147, Hungary – 106, Romania – 25, the world average is 113).

4.4.2. Specifics of the labour market of university teachers in Poland

Economic and social changes generate new challenges on the labour market for teachers in every country. The functioning of the teacher labour market determines, for a given school system, the number and characteristics of teachers, their distribution across schools, and the prevailing employment conditions, including the wage structure. Poland has recently witnessed significant changes in factors that were identified in literature as crucial to the situation of teachers on the labour market, such as systemic reforms, demographic trends, the overall situation on the labour market and occupational prestige.

Work and professional development of an academic teachers – administrative and legal regulations

In the Polish Classification of Occupations and Specialities, academic teacher – occupational group: "specialists" (specialists of teaching and educator), number 2310 (fields of science numbers: 231001–231021 and 231090). The professions that require



a high level of professional knowledge, skills, and experience in technical, natural, social, humanistic, and related sciences.

Academic teacher (Art. 114 of the Law on Higher Education, 20 July 2018) is employed in the following staff groups: teacher, researcher, researcher, and teacher (academics). Working at the university in common terms is a full-time job, but definitely not ending job. Like studying, which does not begin and end on the classes it's continues continuously, the work of a researcher-teacher goes beyond the standard working hours and time spent on the university.

Under the Act 2.0, to become an academic staff member:

- 1) person must have the qualifications specified in the law and the statute,
- 2) cannot be punished with a disciplinary penalty (get fired from work in a university with a ban on work in universities for a period from 6 months to 5 years; suing of the right to be academic teacher for a period of 10 years),
- 3) must have full legal capacity,
- 4) must have a full public rights,
- 5) must not have been convicted of an intentional crime or an intentional fiscal crime (this does not concern only to criminal of copyright, e.g. plagiarism).
- A career is based on following a path of advancement (advancement proceedings):
- 1) proceedings leading to the Ph degree,
- 2) proceedings leading to the degree of associate professor (doktor habilitowany),
- 3) proceedings leading to full professor degree.

Act 2.0 includes a new regulation for promotion proceedings. Promotion schemes are in the POL-on system.

PhD Degree:

- 1) doctoral schools, doctoral seminars (extramural mode),
- 2) doctoral thesis,
- 3) preparation of doctoral dissertation, doctoral examinations, public presentation of the doctoral thesis.

Associate professor degree:

Specific or artistic achievements achieved after the PhD degree, presenting the author's significant contribution to the development of a specific scientific or artistic discipline and presenting significant research or artistic activity. The procedure for the conferment of the academic degree of associate professor degree shall be initiated at the request of person who applies for the conferment of the academic degree of associate professor.

Professor:

The title of professor shall be conferred by the President of the Republic of Poland. This title may be awarded to a person who: has obtained a degree of habilitated doctor; has scientific or artistic achievements, which fall far beyond the requirements



for the candidates applying for the degree of habilitated doctor; has an excellent didactic record, among other things, within the scope of training of academic or artistic staff.

The work of an academic teacher - the essence and specificity

The specificity of the academic teacher's work cannot be put into rigid frames, some of its aspects escape definitions and characteristics. There is a space between the academic teacher and the researcher, which is filled not only by the expectations of the academics, but also by students, employers, society as well as (and perhaps most important) by their goals, responsibilities, needs, concerns, and problems.

It is not only a scientist – researcher and teacher – organizer, manager, and controller of the didactic process, but also an "accountant", mentor, supervisor of students (of the year, specialization, scientific circle), tutor, negotiator, guide, and even a therapist and educator.

The polysemantic nature of the academic teacher profession and multitasking inscribed in its nature.

Professional competences of an academic teacher

In the context of a specific subject of study, these are subject - related competences:

- 1) the system of key competences,
- 2) praxeological the effectiveness of the academic teacher in planning, organizing, implementing, controlling, and evaluating the student learning process,
- 3) communicative effective language communication of an academic teacher in the educational process and in interactions with students,
- 4) interacting the proficiency of the academic teacher's integration activities, e.g. the ability to establish and maintain contact with students,
- 5) creative innovation and non-standard activities of an academic teacher,
- 6) IT efficient use of modern information sources,
- moral knowledge of own ethical obligations towards the subjects of educator – students.

These are the preferred features of an academic teacher in students' opinions research – University of Rzeszow, Faculty of Pedagogy (260 students).

The results of the survey: ranking of the level of importance of individual characteristics of academic teachers of the Pedagogy Faculty at University of Rzeszow. The most preferred qualities according to the students are considered (in brackets – place in the ranking):

- 1) having practical knowledge (1),
- 2) respecting student rights (2),



- 3) being honest (3),
- 4) respecting others' reasons and opinions (4),
- 5) being well-mannered (5),
- 6) being communicative (6),
- 7) being able to admit mistakes (7),
- 8) being intelligent (8),
- 9) being objective (9),
- 10) being kind (10).

Less important characteristics are:

- 1) participation in international scientific cooperation (conferences),
- 2) using of foreign languages,
- 3) good appearance,
- 4) modesty,
- 5) being demanding,
- 6) straightforwardness.

4.4.3. The labour market of academic teachers – selected information and statistic data

The market for teachers functions like any other labour markets, with schools acting as employers of teachers. The labour market for teachers is worthy of attention not only by its size but also because of its effect on children's human capital acquisition and ultimately voter satisfaction. The teacher market, like some other public sector occupations, such as health professional, is peculiar since the State has both monopoly power in the provision of credentials and nearly monopsony power in the recruitment of teachers.

Due to the fact that for many aspects related to Polish higher education Eurostat data are not complete (Table 9), national data were also referred to (Tables 13 and 14). In the Table 13, data on the number of academic teachers in Poland in the years 2010 until 2018 is displayed.

Number of academic teachers: Mazowieckie Voivodeship, Małopolskie Voivodeship (12,712.4), Śląskie Voivodeship (8,241.6), Wielkopolskie Voivodeship (8,919.6), Dolnośląskie Voivodeship (8,479.1). In all voivodeship, there is a clear decreasing tendency of academia teachers.

According to the POL-on register, 373 universities operated in Poland in the academic year 2019/20. The universities employed 93.1 thousand academic teachers, including 43.7 thousand women. There were nearly 13 students per 1 teacher. For comparison, number of teachers in kindergartens and lower-level schools is 513,868 people.



	2010	2011	2012	2013	2014	2015	2016	2017	2018
Poland	101,627	100,808	100 738	98,497.3	96,534.2	95,918.5	95,433.8	94,707.4	93,138.8
Podkarpackie	3,2370	3,264	3 273	3,096.1	3,023.7	3,027.5	3,019.2	3,071.9	2,987.1
Voivodeship									
Mazowieckie	17,192	17,067	17,785	17,960.4	17,482.1	17,427.5	17,125.0	17,110.9	17,044.8
Voivodeship									
(max)									

Table	12 Numerica	, of a code	wais to a sk	o are too F	امم ما (2010 2010
lable	is. Number	OI acaut	ennic teaci	IEIS III P	'Olanu (2010-2010)

Source: own elaboration based on Local Data Bank, Central Statistical Office.

In the Table 14, numbers of academic teachers divided by type of higher education institution is displayed.

	Academic teachers							
Total	Professors	Associate profes- sor	PhD	Assistants	Other			
88,675	24,662	190	38,458	12,072	13,293			
women 41,654	8,102	57	19,011	6,784	7,700			
		Public u	niversity					
79,212	22,154	126	34,818	10,876	11,238			
	Non-public university							
9,463	2,508	64	3,640	1,196	2,055			

Table 14. Academic teachers by type of institution in the higher education and science system (full-time), 2019/2020

Source: own elaboration based on Adamska et al., 2020.

The largest share in the total number of academic staff employed at Polish universities (full-time) is held by persons holding a PhD degree, followed by professors. In the academic year 2019/2020, the share of academic staff employed (full-time) in private universities was small. The vast majority of them worked in public universities.

There is evident declining trend in the number of working academics. The main reason is mostly declining number of students (in 2018, there were 1.2 million students studying at public universities; 10 years ago, it was more than 1.8 million students).

However, this is not a complete explanation – there are less students at higher education institutions, but nevertheless the teachers are overloaded with teaching. Working at the university is no longer a dream – not only for financial reasons (in the market, specialists can earn much more), but also because of unfavourable working conditions – "taking care of the points, colled punktoza (punctosis)", poor culture of cooperation.



Decline of the number of young academics – according to Supreme Audit Office (NIK): inadequate motivational mechanisms for scientific development and fast attainment of subsequent scientific degrees as well as employing scientific staff mainly in connection with teaching work.

4.5. Specifics of teachers' labour market in Hungary

In this sub-section, we focus on the characteristics of the teachers' labour market in Hungary. Firstly, we provide an insight into the Hungarian system of higher education. Consequently, the characteristics of higher education are provided.

4.5.1. Overview of Hungary's higher education system

The most important indicator of the higher education system is the number of students and their status, i.e., whether they study full-time or part-time. Graph 7 shows the evolution of this indicator and the share of full-time students between the academic years 2001/2002 and 2020/2021. The number of students in full- and part-time forms continuously increased in the first part of the analyzed period. However, the number of part-time students started to decrease from 2005–2006 and almost halved by the end of the period. One of its reasons was reallocation between these two forms, i.e. a larger part of the new students started their education in full-time form. Nevertheless, even the number of full-time students started to decline from 2011/2012; although, their number seems to be stabilized around 200 thousand students. The most remarkable fact of this period is most full-time students. Their share was the lowest between 2002 and 2005 (53%), while the highest in 2016–2017 (72%).

It should also be mentioned that the number of children in the education system has been continuously decreasing in the past 21 years. In addition to the number of students in higher education, it is worth analyzing the number of graduates. Graph 8 gives an overview of that for the same period. The number of higher education graduates fluctuated around 50 thousand during the whole period. Its lowest value can be seen in 2001/2002 (47,436), while its highest value was 57,162 in 2005/2006. It should also be mentioned that the share of full-time students increased remarkably from 2001/2002 to 2020/2021 by 10 percentage points. Its final value (73.08%) is in line with the share of full-time students in Graph 7 (71.21%).





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Graph 8. Number of graduates and share of full-time students in Hungary Source: own processing based on HCSO, 2021b.

The most important indicator of the success of the education system is the share of people with primary education only, as well as the share of people with college or university degree. Graph 9 shows the evolution of these shares from 2001 to 2020.



A positive trend can be observed: the share of people with maximum primary education is halved, while the share of people with tertiary education is almost doubled. However, both should be further increased. The higher share of participation in higher education, as well as the higher share of graduation, is one of the national education objectives (HG, 2016). Adequate knowledge becomes more valuable in the era of digitalization, smart technologies, and big data systems.



Graph 9. Distribution of the 25–64-year-old population by level of education Source: author's composition based on HCSO, 2021c.

Different patterns can be seen if these values are divided by sex (Graph 10). The share of women with primary education only is significantly higher than males' share; however, the gap between these two lines became narrower along with the continuous decrease of both. On the other hand, a higher share of women has college or university degree compared to men, and this gap became even wider by the end of the analyzed period. This is not a unique Hungary-specific issue, as the share of females with tertiary degree is 10 percentage points higher in the EU on average (European Commission, 2017).

Regarding age, primary education only is more common among elder people, although its share fell remarkably over the analyzed period from 56.4% to 18.4%. Furthermore, they have lower values for higher education as well. As can be seen in Graph 11, the younger generation is more educated, the share of people with higher education is more than 30% among the population of 25–34 years.

Finally, education matters when it comes to employment, as shown in Graph 12. Higher education decreases the chances of being unemployed and significantly increases the chances of being employed. The chance of being employed was almost the same



in 2001, 18.4% for more educated people, and 17.5% for less educated people. The first value increased to 30,1%, while the second decreased to 10.3%.



Graph 10. Distribution of the 25–64 year-old population by school qualification and gender Source: author's composition based on HCSO, 2021c.



Graph 11. Characteristics of the 25–34 and 55–64-year-old population by school qualification Source: author's composition based on HCSO, 2021c.

Therefore, spending on education is a key to the competitiveness of nations. According to Graph 13. Hungary spent more on higher education, which became 2.35 times



more for tertiary education. However, this growth was smaller compared to GDP growth because this expenditure as a share of GDP decreased from 1.0% (2001) to 0.8% (2019). Moreover, this is measured at current prices; therefore, inflation makes this even less.



Graph 12. Distribution of the 25–64-year-old population by school qualification and employment status Source: author's composition based on HCSO, 2021c.



Graph 13. Hungarian higher education expenditure (billion HUF at current prices) Source: Author's composition based on HCSO, 2021d.



State support could be the most significant element of the financing portfolio of higher education institutions; however, they may have other revenues (ICNL, 2006):

- 1) fees for services provided (e.g. tuition and other fees, different charges),
- revenues from entrepreneurial activities (scientific and applied research, expert studies, dedicated parts of project budgets, revenues from conference hosting/ organization),
- 3) donations and other income.

4.5.2. Characteristics of higher education in Hungary

The Hungarian higher education system provides different opportunities for students. Table 15 gives an overview of the available programs and their hierarchy. Some of the higher education institutions provide different types of vocational training, however, completion of them does not result in a university degree. Bachelor programs last for 3 to 4 years, longer ones often include a mandatory internship.

The Hungarian higher education system is under the supervision of the Ministry of Human Capacities. The authority concerned is the Office for Education, while accreditation processes (programs and institutions) are managed by the Hungarian Accreditation Committee. Higher education institutions generally have three key leaders: the rector, the chancellor, and the president.

	Advanced trainings (1–2 years)	Doctoral programs (2 +	2 years)
Advanced trainings (1–2 years)	Master programs (1–2 ye	ears)	Undivided master
Bachelor programs (3–4 years)		Higher education vocational trainings	programs (5–6 years)

Table 15. Hierarchy of the Hungarian higher education system

Source: own processing based on Derényi, 2020.

There is competition for available programs and places, especially in the case of more prestigious institutions. The connection between the applied and admitted students is shown in Graph 14. The share of admitted students increased remarkably during the analyzed period; however, this was mainly caused by the lower number of students. Data refers only to full-time students as part-time students pay for their education.

Most of the students are in a bachelor program; however, their number decreased by 13% during the analysed period (Graph 15). Due mostly to the Bologna system, the number of master students decreased by one third. Although there are 44% more doctoral students, their share was only 3.53% in 2020/2021. The figure below also shows the increasing share of full-time students.





Graph 14. Number of applicants and admissions to full-time form of universities and colleges Source: own processing based on HCSO, 2021e.





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Graph 15. Characteristics of the higher education in Hungary Source: own processing based on HCSO, 2021f.

Most of the Hungarian higher education institutions are universities financed by the state (foundation financed universities are included). Table 16 also shows that most of the colleges are operated by different churches. Private institutions have a marginal share.

		University	University of applied sciences	College	Total
Public		22	5	3	30
Non-public	Private	1	4	3	8
	Church	6	1	19	26
Total		29	10	25	64

Table 16. Breakdown of the Hungarian higher education institutions, 2020

Source: own processing based on FIR, 2021.

The major difference between universities and colleges is their size: universities are larger in terms of the number of teachers, students, and non-academic employees. Universities offer more programs, including bachelor, master, and doctoral levels. A continuous concentration of the institutions can also be witnessed; some of the colleges



formed universities and/or some universities integrated institutions. Furthermore, larger institutions offer learning opportunities in a wider range of disciplines.

There are large regional differences in the higher education sector. Most of the institutions, therefore teachers and students, are in Budapest. The dominance of Budapest has become even greater (Table 17).

	Central Hungary	Of which Budapest	Transdanubia	Great Plain and North	Total					
	Number of institutions									
2001/2002	34	31	16	15	65					
2011/2012	39	36	14	15	68					
2020/2021	38	34	11	13	62					
	Number of teachers									
2001/2002	11,709	10,389	4,945	6,209	22,863					
2011/2012	10,842	9,839	4,507	6,008	21,357					
2020/2021	13,057	11,993	4,051	6,403	23,511					
		Number of f	ull-time studen	ts						
2001/2002	94,285	83,882	43,317	55,372	192,974					
2011/2012	122,862	112,364	48,857	69,895	241,614					
2020/2021	120,000	112,082	30,679	54,032	204,711					

Table 17. Number of tertiary institutions, teachers, and students in Hungary by large regions, 2020

Source: own processing based on HCSO, 2021g.

Budapest is the capital of Hungary and also the center of education. Most of the higher education institutions can be found in Budapest (Figure 4). In addition to Budapest, mostly the other large cities have universities or colleges.





Figure 4. Geographic location of Hungarian Higher Education Institutions Source: own processing based on HG, 2016.

The Hungarian government published its vision for the future of Hungarian higher education by 2030 (HG, 2016). This vision has two elements: people and institutions. Students will have better usable knowledge in a differentiated education according to their abilities. Teachers will be better prepared, both professionally and methodologically. This vision is based on the personal contacts between teachers and students. There will be much better cooperation between the different institutions. These institutions will be specialized with different educational profiles.

The decreasing number of students in higher education is not a unique Hungarian characteristic. The other Visegrad Four countries experienced the same (Table 18).

Country	Total number of students in 2013 (1,000)	Total number of students in 2019 (1,000)	Students as a share of the total population 2013	Students as a share of the total population in 2019
Austria	422.78	423.05	4.99	4.76
Belgium	488.49	519.21	4.38	4.52
Bulgaria	283.96	229.46	3.91	3.29

Table 18. Number and share of students in higher education in the EU



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	Total number	Total number	Students as a share	Students as a share
Country	of students in 2013	of students in 2019	of the total population	of the total population
	(1,000)	(1,000)	2013	in 2019
Croatia	164.62	163.87	3.87	4.03
Cyprus	31.97	50.21	3.71	5.69
Czechia	427.44	319.34	4.07	2.99
Denmark	291.15	308.57	5.19	5.31
Estonia	64.81	45.48	4.92	3.43
Finland	309.01	295.45	5.68	5.35
France	2,338.14	2,685.41	3.55	3.99
Germany	2,780.01	3,296.25	3.45	3.97
Greece	658.47	794.11	6.01	7.41
Hungary	359.04	281.46	3.63	2.88
Ireland*	199.43	232.51	4.31	4.71
Italy	1,872.69	1,937.76	3.11	3.24
Latvia	94.47	80.36	4.69	4.20
Lithuania	159.70	111.77	5.40	4.00
Luxembourg	6.62	7.10	1.22	1.15
Malta	12.57	16.07	2.95	3.19
Netherlands*	674.75	889.51	4.02	5.16
Poland*	1,902.72	1,430.98	5.00	3.77
Portugal	360.82	368.18	3.45	3.58
Romania*	618.16	533.75	3.09	2.76
Slovakia	209.54	140.81	3.87	2.58
Slovenia	97.71	75.99	4.74	3.64
Spain	1,969.41	2,083.98	4.22	4.42
Sweden	436.60	432.23	4.55	4.21

* Estimated data.

Source: own processing based on HCSO, 2021h.

4.5.3. Impacts of the COVID–19 pandemic with special attention paid to Hungarian higher education

The COVID-19 pandemic made it evident that the human race is essentially vulnerable to pandemic emergencies due to the global economy, especially due to applied restrictions (Uzolli et al., 2021). Strict restrictions on mobility negatively affected every sector in the EU as well, particularly services such as HoReCa (hotel-restaurants-catering) and the industrial sector (Czeczeli et al., 2020; Béresné, Maklári, 2021). However, it should be mentioned that the pandemic positively influenced the IT sector, not only the sale of laptops, PCs and peripherals increased, but also services providing



entertainment opportunities at home (Katona, Ágoston, 2021). All the tools to handle such emergency situations were known before the pandemic, so the question is how different countries, as well as organizations, are able to integrate and use them (Kópházi, 2020).

Labour markets essentially collapsed at the start of the epidemic, especially in the more prospering regions; however, there were no such regional differences during the second wave of the coronavirus (Czirfusz, 2021). It should be emphasized that governmental financial supports have been distributed in a socially unequal way around the world, i.e., the wealth of the richer has increased, while the lower classes have become poorer (Zeller, Kreilinger, Wolf, 2021). The development of different competencies was highly appreciated during the novel coronavirus pandemic. Based on a survey of 508 companies, institutions, and non-profit organizations in Hungary, the TOP10 competencies groups were the following (Bencsik et al., 2020, p. 38):

- 1) digital competencies, IT skills, on-line technology,
- 2) communication, assertiveness, conflict management,
- 3) empathy, emotional intelligence, social skills,
- 4) collaboration, teamwork,
- 5) flexibility, quick adaptation,
- 6) resilience, stress tolerance, load-bearing capacity,
- 7) independence,
- 8) time management,
- 9) problem-solving ability,
- 10) loyalty, commitment.

It should be mentioned that more than 70% of this sample were small and medium-sized enterprises.

Van de Werfhorst (2021) highlighted that the pandemic affected poorer (lack of proper equipment or stable and fast internet, etc.) and less educated families (less help to cover learning losses) more. It is also important to mention that these families were hit harder by the unemployment caused by the pandemic (Hermann, 2020). Proháczik (2020) highlighted that this problem was even greater for families with primary school children, especially in the case of lower digital competencies of parents. Engler, Markos, and Dusa (2021) analyzed the characteristics of parental assistance during distance education. One of their most interesting results was that parents' educational background did not affect the length of the home learning with their children. However, parents who worked in home office had less time to support their kids. As Csapó (2020) advised, special attention should be paid to catching up those who are lagging behind in order to minimize the impacts of this setback.

Based on a Dutch survey, Engzell, Frey, and Verhagen (2021) reported a learning loss of 3.16 percentiles on a composite index of math, reading, and spelling. This equals



0.08 SDs, which is huge in comparison with the annual learning growth of 0.40 SDs under normal circumstances (Engzell, Frey, Verhagen, 2021). Molnár et al. (2021) carried out similar research in Hungary. According to their results, students' average level of knowledge and skills decreased significantly in the academic year 2020/2021 compared to the previous two years in the fields of reading literacy, mathematics, and science.

Regarding education, the COVID-19 pandemic amplified some of the already existing problems of the educational system. For example, dropping out of education is a particular problem in Hungary, where its size is relatively high, around 10% (Lannert, Varga, 2021). However, Hermann (2020) found no evidence of higher dropout in the first year of the COVID-19 pandemic. According to his research, a possible explanation could be the lower standards for students due to the exceptional situation. Otherwise, this can cause problems only in the long run.

Rausch and Misley (2021) emphasized the importance of digital revolution in higher education that was accelerated by the COVID-19 pandemic. This fast transformation process underlined the importance of digital competencies that reveal inequalities, as well as forcing different stakeholders to deal with new devices and technologies. Fortunately, the so-called Z generation (born 1996-2010) have strong IT skills and uses electric devices often and confidently. From the teachers' point of view, it is obvious that well proven face-to-face methods do not necessarily work in the same way online. This put a lot of extra work on them during a relatively short period of time. In some cases, this was just a weekend long period to switch from traditionally used in-person teaching to distance/online teaching (Molnár et al., 2021). According to the internal association university survey, 91% of higher education institutions had a communication infrastructure, but proper communication turned out to be a significant challenge (Marinoni, Van't Land, Trine, 2020). Csapó (2020) highlighted that the COVID-19 pandemic accelerated pedagogical innovations. Hopefully, these pedagogical and institutional innovations become part of the new normal (Hrubos, 2021). It seems that teachers are committed to them (Jarjabka et al., 2020). On the other, switching to distance learning required additional efforts from students as well, especially the active participation in online classes became harder.

Kálmán and Tóth (2020) identified the major areas of COVID–19 related research in higher education. These are teaching, (scientific) research, and (reduced) mobility. In terms of the first one, the vast majority of higher education switched to online and used their already existing infrastructure, as well as the experiences from correspondence education. However, many difficulties arise, such as the bandwidth of the Internet of universities or the harmonization of the different digital platforms. The reallocation of the available funds, as well as the cancellation of international scientific conferences and study trips, made research activities harder; however, the use of existing networks could make research activities more efficient. Regarding (student) mobility,



the coronavirus pandemic affected mostly international students, as different lockdown measures made their travel impossible. Many studies underlined that this switch from in-person to online education has not impacted the commitment of university teachers (Jarjabka et al., 2020; Walker, Brewster, Fontinha, 2020). However, as Jarjabka et al. (2020) emphasized, online education turned out to be more mentally challenging and resulted in higher workload (coping at work and at home simultaneously).

With respect to teaching, the UNESCO has already provided many educational applications, platforms, and resources for distance learning. The following figure gives an overview of these tools with some examples.



Figure 5. Distant learning solutions Source: own processing based on UNESCO, 2022.

The long-term impacts of distance learning are unknown. Transferring these experiences to teacher trainings is of utmost importance (Green, 2020). There are general recommendations already available for the future based on these experiences (European Data Portal, 2020; UNESCO, 2020):

- 1) there is a need for more personalized learning processes,
- 2) the gap in methodological knowledge should be addressed,
- 3) digital inequalities should be handled,
- 4) identifying problems that were already present, as digital inequalities or shortcomings in the teaching methods used may have been hidden,



- 5) the physical and mental health of teachers and students should be considered,
- 6) effective pedagogical approaches have become more valuable,
- 7) the importance of the integration of digital solutions,
- 8) the importance of partnerships and collaborations between public and private educational institutions and market actors.

Based on a systematic literature review, Kopp and Saád (2021) found that most of the publications dealing with the impacts of COVID–19 on higher education have focused almost entirely on teaching-related issues, i.e., on education management and students, while teachers' well-being remained less studied. This is the case despite the fact that a number of publications concerning the drastic transformation of the teaching profession were published recently (e.g. Hargreaves, Fullan, 2020; Reimers et al., 2020). Therefore, this project titled "Does well-being matter? Higher education teachers during COVID–19 pandemic" can be considered as niche research.



5. Time allocation and well-being of university teachers in V4 countries

In this part of the monograph, authors present results of original primary research conducted at the same time in all V4 countries. The chapter is divided in two parts. In the first part, authors describe aim, research questions, and selected methods used in the research. In the second part, authors present selected results of the questionnaire survey, focusing on the time allocation of the university teachers during the working days in the COVID–19 period and their well-being linked with academia environment.

5.1. Aim and methodology

The main aim of the monograph is to identify time allocation and selected components of well-being of university teachers during the performance of their work duties during the COVID-19 pandemic.

To collect data on time allocation and well-being of university teachers during the COVID-19 pandemic, we used an online platform survey (based on example of Cellini et al., 2020). The questionnaire was prepared in five identical language mutations - English, Slovak, Polish, Hungarian and Czech. In each country, the same questionnaire in different language was distributed. The questionnaire consisted of 6 sections and 38 questions. The first section (11 questions) focused on the basic socio-demographic data on respondents (gender, age, country of origin, name and location of the university, number of years respondents were teaching at the university, number of students, etc.). The second section (8 questions) focused on gathering information on teaching under COVID-19 circumstances. We were asking on the period September 2020 - February 2021 (reference semester). In the second section, questions on methods of teaching (online, face-to-face, hybrid), number of courses taught online or hybrid, subjective satisfaction with various areas of online teaching, and support from the university were included. The third section (3 questions) pointed to the expectations of teachers after the end of COVID-19 pandemic. The fourth section (4 questions) was dedicated to the perception of work-life balance before the COVID-19 pandemic and during the COVID-19 pandemic. In this section, respondents also rated how various areas of their lives changed due to the COVID-19, as well as how satisfied they are with various aspects of online teaching. The fifth section of the questionnaire (6 questions) focused on the time allocation. Respondents were asked to report the standard part of the day when they performed various work-related activities in the reference semester. In the last, sixth section (6 questions) we focused on the feelings of the respondents.



Respondents were asked to indicate for each activity the emotion with which they most or most often associate the activity during the reference semester.

The questionnaire was distributed with the consent of the rectors of all four universities (Matej Bel University in Banská Bystrica, Slovakia; University of Rzeszow, Poland; Corvinus University in Budapest, Hungary; and Charles University in Prague, Czech Republic). Also, the Ethic committee of the Matej Bel University (as the main partner in the project) considered the ethics of the research and gave its approval. The questionnaire was available online within two weeks, from 28.02.2022 to 13.03.2022. Altogether, 237 respondents correctly fulfil the questionnaire. More detailed information about the research sample for each country/university is included in the section 6.2 of the publication.

In the monograph, we focused on the selected results of the questionnaire research. We combine information about the time allocation and about the emotions of the teachers, to point to the well-being of university teachers during the COVID–19 pandemic. That is why we provide more detailed information about time allocation section and feelings section of the questionnaire.

5.1.1. Time allocation section of the questionnaire

Within the time allocation, we did not analyse the whole working and free day (24 hours). We focused only on the working day of the teachers, and within the working day only on those activities, which are linked with the paid work. As we analysed period of the COVID–19 pandemic, with the various state measurements to protect human health and life (including obligatory and/or voluntary work from home, which significantly also influenced time use of the teachers), we divided the day in six periods:

early morning (from 4: 00 a.m. to 8: 00 a.m.),

morning (from 8: 00 a.m. to 12: 00 noon),

afternoon (from 12: 00 noon to 4: 00 p.m.),

late afternoon/evening (from 4: 00 p.m. to 8: 00 p.m.),

late evening (from 8: 00 p.m. to 12: 00 midnight),

in the night (from 12: 00 midnight to 4: 00 a.m.).

We divided data on time allocation into 6 groups of activities. The groups of activities were set according to the individual experience of the authors, based on observation at all 4 surveyed universities, and on brainstorming with several experts during workshops organized at all 4 surveyed universities prior to the actual preparation of the questionnaires. The groups of activities cover the most reported activities of university teachers, in three main areas – teaching, research and science, and administration. In defining these areas, we have relied on previous research and the classification



of university teachers' activities according to Milem, Berger, and Dey (2000), Houston, Meyer, and Paewai (2006), Link, Swann, and Bozeman (2008), Winslow (2010). We divided teaching into two sub-sections, namely preparation for teaching and teaching itself. We also divided research and science into scientific and research activities, and publishing activities. Administration covered not only various service activities, but also IT management and technical support (as a very specific requirement linked with the adaptation to COVID–19 period). To sum up, we included following groups and particular activities of the university teachers into the analysis:

- 1. Preparation for teaching (all online, face-to-face, hybrid). This category includes study of literation and other information sources, search in online databases and monitoring of internet portals, updating lectures, exercises, and presentations, preparation of study materials, laboratory materials, practical exercises, and other activities, recording of lectures and other additional sound recordings, preparation of tests, tasks, assignments, and topics for projects and term papers.
- 2. Teaching itself (all online, face-to-face, hybrid). This category includes providing of major part of online lectures, seminars, tutorials, and guest lectures, individual consultations with students regarding lessons, individual consultations with students regarding their final theses, participation in student activities, student discussion forums, or internet platforms discussions.
- 3. Scientific and research activities. It includes monitoring and preparation of project documents, schemes, calls, and grants, team consultations on projects, objectives, and goals, working on the project, administration, submission, and communication with grant agencies, interim and final reports, and other project deliverables.
- 4. Publishing activities. This category includes study of relevant sources and materials, searching in online databases, processing of articles, studies, teaching texts and proofreading, consultations with co-authors, administration, submission, review, and consideration of comments of reviewers.
- 5. Providing and/or using and/or applying IT management and technical support. This category of activities includes participation in trainings, instructional webinars, consultations on new programs, familiarization and study of new procedures, and software (LMS MOODLE, AIS, MS Teams, Zoom, ...), testing new techniques and programs with colleagues and/or students.
- 6. Other work duties. Within this category, we focused on online meetings and consultations, online conferences and workshops, assessments of qualification work, reviews, and opinions, participating in committees and working groups, individual communication with supervisors, individual communication with colleagues.



5.1.2. Feelings section in the questionnaire

Besides the time allocation and increase of the workload during the COVID-19 pandemic, we focused also on the emotions, satisfaction, work-life balance and overall well-being of the university teachers. The questionnaire included questions that focused on:

- 1) rating the changes in various aspects of the life due to the COVID-19 (including physical activities, mental conditions, health, depression, eating habits, social life, time for friends, pet care, relations to relatives, etc.),
- rating the satisfaction with various aspects of online teaching (including engaging students in the courses, promoting students' interactions, getting feedback from students, achieving learning objectives, using of technological support, etc.),
- 3) changes in work-life balance,
- 4) rating the support from the university during the COVID-19 period,
- 5) identification of the predominated feelings while performing particular activities (as part of preparation for teaching, teaching itself, science and research activities, publication-related works, IT management and other supporting works).

To select feelings that we indicated in the questionnaire, we rely on so far research on well-being of teachers and well-being in general. The problem of selecting emotions that are the most suitable for describing feelings of teachers during their working obligations was, that there is a lack of research that focus particularly on affective component of the well-being of university teachers.

Emotions which we chose are based on various international survey on well-being, including OECD recommendations and Time Use Survey (to find out well-being of respondents – linkage of time – activity – emotion). From all the recommended emotion we have chosen those, that correspond with academia teachers. In all of the well-being and Time use recommendations, negative emotions should predominate (this is the reason on choosing 5 negative and 2 positive emotions). To find out both time allocation and well-being, we used memory-based approach (Zuzanek, Zuzanek, 2015). The reason for choosing memory-based approach and not the real time data indications was the fact, that we were collected data concerning the period September 2020 – February 2021. As data were collected via the online questionnaire (using the MS forms platform) in March 2022, we had to rely on the memory of respondents. Relying on the memory of respondents, without the possibility to interactively navigate respondents while they were fulfilling the questionnaire, was one of the many disadvantages of the research.

To indicate the feelings, we asked respondents to remember how they felt at the moment of performing various paid work-related activities. This approach corresponds with the ESM surveys (Schwarz, Kahneman, Xu, 2009), however modified for the memory-based method.



To indicate the feelings, respondents could choose from following feelings:

- 1) stressed,
- 2) irritated,
- 3) motivated,
- 4) work overloaded,
- 5) tired,
- 6) useful,
- 7) disgusted.

Feelings of motivated and useful represent the positive emotions. On the other side, feelings of stressed, irritated, work overloaded, tired, and disgusted represent negative emotions experienced by university teachers.

In the following part of the publication, we provide selected results and findings of the research, concerning mainly on time allocation and feelings of university teachers during the COVID-19 pandemic.

5.2. Descriptive statistics

This subchapter aims to describe the basic data on the sample of respondents who took part in the questionnaire survey. We provide descriptive statistics for each state separately, noting that in addition to the basic identifying characteristics of the respondents, we also report the main characteristics of the university from which the respondents are affiliated.

5.2.1. Slovakia

In Slovakia, 74 university teachers participated in the questionnaire survey. All of them are employees of Matej Bel University in Banská Bystrica (hereinafter also MBU). MBU is the tenth largest university in Slovakia in terms of the number of employees. In 2019, 511 employees worked at MBU (Higher Education Portal, n.d.). MBU provides education at all 3 levels of study (Bachelor's, Master's, Doctoral) at six separate faculties (Faculty of Economics, Faculty of Law, Faculty of Arts, Faculty of Education, Faculty of Natural Sciences, Faculty of Political Science and International Relations). In 2021, there were 348 accredited study programmes at MBU (due to the ongoing accreditation process, in 2022 the study programmes will be adjusted to the established quality standards and from September 2022, MBU will offer a reduced number of upgraded study programmes (the assumption is 194 study programmes).



In 2021, there were 463 teaching staff working at MBU, 239 of whom were women (51.62%; source: MBU internal reports). The structure of the research sample in terms of gender is similar (although not representative) to the structure of staff at MBU. The structure of the research sample by gender is shown in Graph 16.



Graph 16. Structure of respondents in Slovakia divided by gender (in %) Source: own processing.

Of the total respondents, 42 were female (56.76%) and 32 were male (43.24%). In terms of age groups (Graph 17), employees aged between 46 and 50 years were the largest group (43.24%), followed by the group of employees aged between 31 and 45 years (37.84%).





The group of employees aged over 60 years was also highly represented (12.16% of respondents were aged 61 to 70 years and 2.7% of respondents were over 71 years). The age structure of the respondents is similar to the age structure of employees in universities in Slovakia (Figure 1, note: we can only speak of similarity because we are comparing two different time periods, the number of purely teaching staff with all staff, while the age groups are also broken down differently). At MBU itself, the largest group of employees in 2019 was the 40- to 49-year-old group (39.96%), followed by the 50to 59-year-old group (20.36%).



In terms of the structure of teaching staff in relation to their scientific and pedagogical rank, assistant professors were predominant at MBU in 2021 (54.86%; without specification whether they are assistants without or with PhD). Associate professors were the next largest group (28.73%). Professors accounted for 14.47%. We were also interested in the scientific and pedagogical rank of the respondents. The research sample replicates the composition of the teaching staff of the whole MBU. Among the respondents, assistant professors also predominate (together with PhD and non-PhD they were 55.4%), followed by a group of associate professors (33.78%). The structure of the respondents according to the scientific and pedagogical rank is shown in the Graph 18.



Graph 18. Structure of respondents in Slovakia divided by scientific and pedagogic rank (in %) Source: own processing.

Most of the respondents work full-time at MBU (93.24%). Only 5.41% of the respondents stated that they work part-time; one respondent stated that he/she is a PhD student. The largest proportion of respondents have been working at MBU for more than 10 years (67.57%), followed by the group of employees who have been working at MBU for 6 to 10 years. This is indicative of the relative permanence of the employment relationship. It also corresponds with the fact that the majority of respondents were either assistant professors with PhDs or associate professors (for whom the requirement is to have worked at MBU for at least 5 years after completing the PhD).

5.2.2. Poland

In Poland the largest share of full-time employees are assistant professors. This concerns academic teachers employed in both public and non-public higher education institutions (Table 19).



Types of institutions	Total	Professors	Docentsa	Assistant professors	Assistant lecturers	Others
Total	88,284	25,990	82	38,821	12,569	10,822
Public higher education institutions	78,818	23,448	41	35,039	11,175	9,115
Non-public higher education institutions	9,466	2,542	41	3,782	1,394	1,707

Table 19. Academic teachers by types of institutions of the system of higher education and science in Poland (full-time employed), 2020

^a An appointment awarded under regulations applicable until 2011.

Source: own processing based on Adamska et al., 2020.

Among the teachers employed at the University of Rzeszów the largest group are those with doctoral degrees, followed by those with post-doctoral degrees. Title professors account for the smallest share. In the period 2019–2021, an upward trend in the overall level of employment of teachers at the University is observed (Table 20).

Table 20. Academic teachers by University of Rzeszów by degree/academic title (2019–2021)

Academic teachers	2019	2020	2021
Total	1,297	1,316	1,333
Professors	96	100	96
Associate Professors	296	309	307
PhDs	645	635	661
Magisters	260	272	269

Source: own processing based on data of University of Rzeszów.

The gender structure of academic teachers employed at the University of Rzeszów has been balanced in recent years, with a slight predominance of women (Graph 19).



Graph 19. Academic teachers of University of Rzeszów by gender (2019–2021, in %) Source: own processing based on data of University of Rzeszów.


Most academic teachers (about 90%) are employed at the University of Rzeszów based on an employment contract, full-time. This amount was characterised by a slight downward trend in 2019–2021, as shown in Graph 20.



According to the project timeline, the questionnaire on the allocation of time and well-being of university teachers in the V4 countries was available between 28.02.2022 to 13.03.2022. During this period, a total of 86 questionnaires were completed in Poland. There was a slight predominance of women among the respondents (52%; Graph 21).



Graph 21. Gender of the respondents from Poland (in %) Source: own processing.

Nearly half of all respondents were aged 46–60. The second most numerous group was group of employees aged 31–45. The smallest proportions of respondents were under 25 years old and over 70 years old. Graph 22 gives an overview of the age composition of the Polish research sample.





Graph 22. Age composition of the Polish research sample (in%) Source: own processing.

In the second largest age group of respondents (31–45 years), as many women as men participated in the survey. On the other hand, women predominated among respondents in the largest age group (46–60 years). Table 21 shows the structure of respondents by gender and age.

Gender Age	Women	Men	No answer
20–25 years	-	1	-
26–30 years	2	3	1
31–45 years	16	16	-
46–60 years	26	15	-
61–70 years	1	4	-
71 and more years	_	_	1

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Source: own processing.

As a matter of occupation, the vast majority of the respondents are full-time employees. This means that there are 86 teachers out of the total of 73, resulting in their 84.9% share. Only 13 respondents belonged to the other 4 groups (part-time employee, external collaborator, PhD student and other). Graph 23 shows the occupational composition of the sample.

With respect to work experience, more than half of the respondents have spent more than 10 years in their actual workplace (58%). This is closely related to the age composition of the sample, since only 8.1% of the respondents were younger than 30 years old. 16% of the teachers in the sample are employed from 4 to 5 years at their current workplace. About 10% of all respondents have worked at the University of Rzeszów either for 1–2 years or 6–10 years, while 5% of respondents (only 4 teachers) started working for their current employer less than a year ago (Graph 24).





Graph 23. Occupational composition of the Polish sample (in%) Source: own processing.





The age of respondents is related to their professional career. The older a respondent is, the more likely he/she is to obtain successive degrees of professional promotion. In Poland, according to the Act of 20.07.2018. – Law on Higher Education and Science (the so-called Constitution for Science or Law 2.0), an academic teacher can be employed as: professor, university professor, assistant professor and assistant.

In turn, a person holding the title of professor may be employed as a professor. The position of professor may be taken up by a person having at least a doctoral degree and significant scientific (artistic, didactic, organisational or professional) achievements. The position of adjunct may be taken up by a person holding at least a doctoral degree, and the position of assistant by a person holding the degree of magister, magister inżynier or an equivalent degree. In relation to the academic qualifications of the respondents, the vast majority of respondents are assistant professors with PhD (45%). Assistant Professors with PhD constitute 23% and Associate Professors 20% of all respondents. Among the respondents there were 5% with the title of professor (Graph 25).





Graph 25. Scientific and pedagogical status of the respondents from Poland (in%) Source: own processing.

5.2.3. Hungary

Related to the research, two key information on Corvinus university in Budapest (further in text also CUB) will be presented that is closely related to the questionnaire. These are the gender composition of university personnel and the academic status of the employees. The graph 26 provides an overview of the CUB personnel by gender for December 2021.





As can be seen in Graph 26, CUB has slightly more male employees than female employees among its teachers measured either in the number of employees or full-time equivalent (FTE). The share of male teachers increased slightly when it is measured in FTE, which indicates that the share of full-time employees is somewhat lower among them. Table 22 provides a more detailed analysis of this issue for the last three years.

During the last three years, the gender composition of the academic staff at CUB has not changed significantly. Furthermore, the slightly higher share of female academics measured in FTE compared to the number of people remained stable during



this period. Regarding the position of academics, Graph 27 gives an overview of them broken down also by the number of teachers and their FTEs.

Condor	2019		20	20	2021		
Gender	No.	FTE	No.	FTE	No.	FTE	
Male	56.84%	55.31%	56.76%	55.66%	57.12%	55.98%	
Female	43.16%	44.69%	43.24%	44.34%	42.88%	44.02%	

Table 22. Share of full-time academic workers in CUB by gender, 2019–2021

Source: own processing based on CUB data.



Graph 27. Position of the CUB's academic employees by number (A) and full-time equivalent (B), 2021 Source: own processing based on CUB data.

As seen in the figure above, the other group is the largest group by the number of academics, followed by associate professors, assistant professors, and professors. However, when this is measured in FTE, associate professors provide higher working hours compared to teachers in the other category. This clearly indicates that a higher share of associate professors is full-time employed at the university than teachers in the other category. This is analyzed in greater depth in Table 23.

It can be stated that the share of the categories 'other' and 'associate professor' increased, while the share of the other two categories (assistant professor and professor) decreased during the last three years. Regarding the FTE values, they are slightly higher in the categories of 'associate professor' and 'professor' compared to the categories of 'assistant professor' and 'other', which indicates a different share of full-time employment. On the basis of the dataset, this is exactly the case. When FTE is divided by the number of employees for each category, its value is 96% for professors, 89.52% for associate professors, 85.59% for assistant professor, and 80.56% for others. In other words, it means that professors are almost entirely full-time employed, and this share decreases gradually for the other categories. There is a clear assumption behind this:



being a professor is the top of the academic life, which is highly appreciated. Teachers who are closer to this position (associate professors) are more committed to their academic life than those who are farther from it (assistant professors). In relation to the other category, there are special positions (e.g. language or physical education teachers) where this academic path is not a common option. Figure 6 presents the potential paths of the academic life among the categories analyzed above. There is a straightforward path from assistant professor to professor by being promoted to associate professor during this process. Due to the diverse composition of the other category, all three categories above are potentially possible from there. In addition, there are academics outside the CUB who may join the university in the category corresponding to their qualifications and experiences.

A co domi c no siti on	2019		20	20	2021	
Academic position	No.	FTE	No.	FTE	No.	FTE
Assistant professor	24.56	24.54	21.37	21.13	22.01	21.85
Associate professor	31.93	32.60	35.39	36.50	33.82	35.12
Professor	12.28	13.42	10.52	11.62	9.71	10.81
Other	31.23	29.44	32.72	30.75	34.47	32.21

Table 23. Share of full-time academic workers in CUB by position, 2019–2021 (in %)

Source: own processing based on CUB data.



Figure 6. Schematic representation of academic changes Source: own processing.

With respect to the COVID–19 pandemic, CUB strictly followed the Hungarian rules. According to that, the spring semester of the academic year of 2019–2020 was held entirely online. The fall semester of the academic year of 2020–2021 started with in-person classes for the smaller classes, mostly seminars, while e.g. lectures for more than



150 students were and are currently held exclusively online. However, due to the second wave of coronavirus, the second half of the semester went completely online. This was a smaller shock compared to the previous semester, as some of the materials were already available. Nevertheless, there were some other problems, such as the difference between the quality of the in-person and online performance and the use of hybrid assessment. Although the COVID–19 pandemic caused a massive loss of jobs, a totally different picture can be seen in the CUB. Table 24 shows the evolution of the academic workforce between 2019 and 2021. According to the official data of the CUB, the number of employees, as well as their FTE values, continuously increased over these years. This increase was larger in terms of the number of employees, while slightly smaller in terms of FTE.

	2019	2020	2021
Number of employees	570	599	618
FTE	503.7	521.6	532.7

Source: own processing based on CUB data.

According to the project timeline, the questionnaire on the allocation of time and well-being of university teachers in the V4 countries was available from 28.02.2022 to 13.03.2022. During this period, a total of 67 questionnaires were completed in Hungary. At the Hungary level, 26 of these respondents were women, while 41 were female staff members. At the university level, 68.7% of the respondents were employed by the Corvinus University of Budapest (CUB). Its gender composition was slightly more balanced, as 41% of them were female colleagues, 19 out of the total of 46. The Graph 28 shows the comparison of the total sample and the CUB subsample.



Graph 28. Comparison of the total Hungarian sample and the CUB sample (in%) Source: own processing based on Hungarian questionnaires.

Regarding the age structure of the respondents, most of them were young and middle-aged adults, i.e., between 31 and 45 years of age. This means 30 teachers out of the total



of 67 (45%). This subgroup was followed by middle-aged adults (46 to 60 years), who had 34% of the total sample. There were 7 older adults (between 61 and 70 years), 5 young adults (between 26 and 30 years), and 2 old adults. Graph 29 gives an overview of the age composition of the Hungarian sample.



Graph 29. Age composition of the Hungarian sample (in%) Source: own processing based on Hungarian questionnaires.

As a matter of occupation, the vast majority of the respondents are full-time employees. This means that there are 58 teachers out of the total of 67, resulting in their 86.6% share. Only 9 respondents belonged to the other 3 groups (part-time employee, PhD student and other). Graph 30 shows the occupational composition of the sample.





With respect to work experience, more than half of the respondents have spent more than 10 years in their actual workplace. This means 34 teachers out of the total of 67 respondents. This is closely related to the age composition of the sample, since only 8% of the respondents were younger than 30 years old. There is relatively high accessibility between universities; however, switching from one to another often means moving from one city to another. The only exception is Budapest, where there are many universities in similar disciplines, which makes this change easier. 21% of the teachers in the sample are employed from 6 to 10 years at their current workplace, 13% of them taught 4–5 years at their workplace, 10% of them have 1–2 years of experience, while



5% of the respondents (only 3 teachers) started to work for their current employer less than a year ago (Graph 31).



Graph 31. Composition of the duration of work at the current employer (in%) Source: own processing based on Hungarian questionnaires.

Finally, the professional background of the respondents will be analyzed. This also greatly relates to the age of the respondents, as the older the respondent, the more likely they are to obtain a higher academic qualification or promoted to professor. Promoting to professor is initiated by the host university of the teacher, and his/her application is evaluated by the Hungarian Accreditation Committee (HAC). The HAC "operates within the scope of the Standards and Guidelines for Quality Assurance in the European Higher Education Area" (HAC website, 2022). The legal background of this procedure is the Act CCIV of 2011 on national higher education.



Graph 32. Academic status of the respondents (in%) Source: own processing based on Hungarian questionnaires.

In relation to the academic qualifications of the respondents, the vast majority of respondents are associate professors (32 teachers out of a total of 67). This means 47.8% of the sample (Graph 32). 16% of the respondents are assistant professors with PhD, while 2%, which is actually only 1 respondent, are assistant professors without PhD Ten respondents are professors (15%), while 13 teachers are in the other category (19%). The academic status of the respondents in this subgroup are PhD students,



research fellows (including senior and assistant research fellows), assistant and senior lecturers, research associates, or language teachers.

5.2.4. Czech Republic

In the Czech Republic, data collection was carried out at Charles University in Prague. Charles University is the oldest university in Central Europe and the leading Czech university. It currently consists of 17 faculties, most of which are in Prague, two faculties in Hradec Králové and one in Plzen, as well as four university institutes, five other departments and five university-wide special-purpose facilities. In 2019, a total of 830 study programmes or fields of study were implemented at Charles University, including 175 bachelor's programmes, 25 master's programmes, 164 follow-up master's programmes and 466 doctoral programmes. In 2019, there were 16,623 students in the bachelor's programme, 14,470 students in the master's programme, 8,821 students in the follow-up master's programme, 6,487 students in the Doctoral programme, and 9,095 international students, who account for 19.6% of the total number of students. A total of 7,892 graduates successfully completed their studies in 2019.

A total of 9156 employees worked at the university in 2019. Of these, there were 3,885 academic staff, 1,248 scientific staff, and 4,021 administrative and other staff.

Even given the above data on Charles University, it is unfortunate that only 10 respondents participated in the survey, the lowest among the four states that were involved in the research. Despite the small research sample, we include these respondents in the analysis of university faculty members' time allocation and analysis of their feelings during the provision of job duties during the COVID–19 pandemic (that is, well-being). However, we present descriptive statistics on the research sample for Charles University only in a descriptive manner, as it does not make sense with 10 respondents to analyse the sample in detail and graphically.

Of the total number of respondents, 6 were female and 4 were male. The age category of 31- to 45-year-olds and the category of 46- to 60-year-olds were predominant (3 respondents in both groups). As many as 7 respondents stated that they have been working at the university for more than 10 years; another 2 respondents have been working at the university for 6 to 10 years. An equal number of respondents (4 each) reported working full-time and part-time. The largest number of respondents were assistant professors (3 without a PhD and 3 with a PhD).



5.3. Time allocation of V4 university teachers

In this part of the publication, we provide selected results of the research focusing on the time allocation of the university teachers. Results are processed for all 4 universities from V4 countries. When necessary, we also provide specifics of teachers in each university.

In the following sig graphs, time allocation of V4 university teachers in various activities are displayed. We did not examine the exact time that teachers dedicate for various activities; we focused only on the period of the day, when a major part of particular activity takes place. It means, we are no table to conclude how much time teachers dedicate for activity.

In the Graph 33, ratio of teachers providing activities linked with preparation for teaching during the day is displayed.



Graph 33. Time allocation for activities linked with preparation for teaching (in %) Source: own processing.

Preparation for the teaching is an important part of the activities of academia teachers. Without the appropriate preparation, no successful and innovative teaching is possible. Based on own experience, preparation for teaching could eventually cover longer period than teaching itself. That is why we were interested, which part of the day teachers usually dedicate for the preparation for the teaching. Most of the teachers (from 71.3% in case of preparation of studying materials, laboratory materials, practical exercises, and other activities to 79.3% in case of preparation of tests, tasks, assignments,



topics for projects and term papers) prepare themselves for the teaching in the morning (8 a.m. – 12 a.m.), late afternoon (4 p.m. – 8 a.m.) and in the late evening (8 p.m. – 12 p.m.). It is interesting, that in case of all partial activities, most of the preparation for teaching is in the late night. Exception is only recording of lectures and additional sound recordings, which was not performed by almost 41% percent of teachers (this is, however, an interesting finding, because one of the specific of online teaching during the COVID–19 period is a possibility of providing lectures off-line, it means offering lectures which are pre-recorded). From 0.4% to 3.4% of teachers prepared themselves for teaching in the night. I tis not a high ratio of all respondents, but it is still an alarming fact pointed to the high workload of university teachers. I tis interesting that during the afternoon, relatively low ratio of teachers (from 10.5% in case of studying of literature and information sources to 15.6% in case of preparation of study materials, laboratory materials, practical exercises, activities) prepare for teaching in the afternoon (12 a.m. to 4 p.m.).

Preparation for teaching and teaching itself represent a major part of activities of standard university teachers in V4 countries (by standard university teachers we consider those teachers, whose activities are divided between teaching, scientific activities and administration. We are not focusing on those academia staff whose main activity is focused on science and who either do not teach at all or dedicate to teaching only a little part of their working time). In this sense, it is necessary to examine preparation for teaching in combination with teaching itself. On the graph 34 there are data on the ratio of teachers performing various teaching activities during the day.



Graph 34. Time allocation for activities linked with the teaching (in %) Source: own processing.



Most of the pure teaching activities (online lectures, seminars, tutorials, guest lectures) as well as direct interactions with students (individual consultations with students regarding the lessons) took part either in the morning (8 a.m. - 12 a.m.) or in the afternoon (12 a.m. - 4 p.m.). It is evident that afternoon time teachers dedicate mostly for teaching, while morning time is almost equally divided into preparation for teaching and activities included in teaching itself. A major part of online lectures and seminars took place in standard working time (form 8 a.m. to 4 p.m.; 92% of all teachers teach within this time span). Only 5.9% of teachers teach in the late afternoon. I tis, however, interesting that almost 21% of teachers dedicated late afternoon for individual consultations with students regarding lessons and more than 26% of teachers to individual consultations with students regarding their final thesis. Consultations regarding the thesis is equally distributed in the morning (28.3% of teachers), in the afternoon (29.5% of teachers) and in the late afternoon (26.2%). Participation on student activities, student discussion forums, and various internet platforms was not performed by more than 44% of teachers. I tis not a surprising finding, as students' activities are usually concentrated only to few activities during the year and not all academia staff are obligatory involved in these activities.

Beside teaching, participation in scientific activities and publishing scientific papers and teaching textbooks are the most significant activities of university teachers. That is why we were interested which parts of the day teachers usually dedicate for these activities. In the Graph 35 there are data on the ration of teachers who focus on various sub-activities of science and research during the day.



Graph 35. Time allocation for activities linked with science and research (in %) Source: own preparation.



Science and research cover various activities linked with the preparation, administration, submission, and fulfilment of the scientific project. It is interesting that approximately one third of all teachers did not participate in these activities. This finding is not only interesting but also surprising, because in all V4 countries the current trends in higher education focus on the increased pressure to participate in the scientific projects. I tis not only for the further improvement of the teachers' knowledge and skills, but also because of the financial principles (universities are financed not only based on number of students, but also based on the amounts of money obtained from various grants. We were interested, whether i tis a trend in all 4 universities or not. When comparing country of the respondents, we found out, that in Hungary 24% of teachers did not participate on research and science at all and only less than 13% participated on selected activities within research and science. Similar situation is in Poland, where almost 49% of teachers did not perform science and research activities at all, and only 7.51% of teachers participated on selected research and science activities (in both countries, mostly working on projects, preparation of grants and communication with grant agencies). On the other side, only less than 7% teachers in Slovakia did not participate on science and research, and only 16.2% of teachers participate on selected activities (it means that 77% of all teachers in Slovakia participated on research and science). I tis a very surprising finding pointed to the different preferences and different workload of teachers in these three countries. While teachers in Poland and Hungary focus mostly on preparation for teaching and teaching itself, teachers in Slovakia must dedicate their time also for science and research. The highest ratio of all teachers focused on science and research in the afternoon (12 a.m. to 4 p.m.). We can suggest that it is mostly because of the necessity to discuss various aspects of projects with colleagues and/or grant agencies, which influence the part of the day when these activities can be performed. However, teachers focus on research and science also in the morning late afternoon/evening and in the late evening.

Research and science are closely linked with publication activities. Without the participation on scientific research, it is not possible (or it is at least much more complicated) to write a reputable scientific paper. Of course, publishing does not include only publishing of scientific papers, but also writing and publishing studying materials necessary for teaching. We were interest whether all teachers were involved in publishing activities and which parts of the day they dedicated for this activity. In the Graph 36 there are data on the ratio of teachers who participate on publishing activities during various parts of the day.

As we expected, only a very little part of all teachers (about 5%) did not participated at any of publishing activities. I tis evident that not participating on research and science does not have influence on publishing activities. Our findings show that publication-related work belongs to those activities for which teachers do not have time within



the standard working time. Most of the teachers performed these activities in the late evening (8 p.m. -12 p.m.) and even in the night (almost 5% of teachers) and early morning (4 a.m. -8 a.m.; for example, in case of studying relevant literature 4.6% of teachers). Exception is only consultation with other co-authors, which is mostly performed during the standard working time (however, 16.5% of teachers consulted with co-authors in the late evening). It seems that particularly focus on the publication-related activities requires quiet environment, without interruptions from students, colleagues and in case of work from home also from other members of the household. On the other side, publication-related activities significantly increase the work overload of the university teachers and interfere with the private life of teachers.



Graph 36. Time allocation for activities linked with publishing activities (in %) Source: own processing.

From our results it is clear that major and basic obligations of teachers (preparation for teaching, teaching itself, research and science, and publication-related activities) were spread within the whole day (24 hours) during the COVID–19 period. This period, however, increased requirement also for mastering information technology and for various administrative works. That is why we focused also on these activities of teachers. In the graph 37 there are data on the ratio of teachers who participate on IT management and supporting activities during various parts of the day.

Most of the activities related to IT management were performed in the morning (8 a.m. – 12 a.m.) and partly in the afternoon (12 a.m. – 4 p.m.). I tis not surprising, as mastering IT (including testing programmes with colleagues and students, studying new software and procedures, or participation on various types of trainings) requires



interactions with technicians, colleagues, students, and trainers. There are, of course many online courses and we suppose that those teachers who dedicate to IT management their time in the late afternoon, late evening and in the night, are participating either on online courses or self-training. Surprisingly, almost one third of all university teachers did not participate on any activities linked with It management and supporting activities.



Graph 37. Time allocation for activities linked with IT management and supporting activities (in %) Source: own processing.

The last group of activities we examined included other kind of works, which did not fit well to previously mentioned groups. This group includes various kinds of consultations, participation on committees, reviewing, etc. In the Graph 38 there are data on the ratio of teachers who participate on other works during various parts of the day.

Part of the day, in which a major part of teachers performed various activities within this group depends on the character of the activity. In case activity requires interactions with colleagues or other persons (such as workshops, conference, consultations, communication with supervisor or colleagues), these activities were performed mostly in the morning, eventually in the afternoon (with about 10–19% of teachers performing them also in the late afternoon). On the other side, assessment of qualification work and writing reviews (it means activities without direct interactions with other persons) were mostly performed in the late afternoon and in the evening (up to the midnight). Surprisingly, 2% of teachers performed them in the night and 1.3% of teachers in the early morning.





Graph 38. Time allocation for activities linked with IT management and supporting activities (in %) Source: own processing.

From the results of the research, we can sum up, that COVID-19 period was not easy for the university teachers in V4 countries. Their work activities (which we have divided into three main groups, namely preparation for teaching, teaching itself, participation in science and research and publishing, and administration and IT management) exceed the amount of official working time available to them daily. Teachers have thus had to allocate individual activities to late afternoon, late evening, or night or early morning. Combined with the increase in responsibilities related to the care of household and family members, which at the time of the COVID-19 pandemic were significantly affecting the lives of all, and therefore also university teachers, the workload of university teachers is extremely high.

Time allocation within the COVID–19 period is interesting also in the comparison with the period preceding the pandemic. During the standard semester before the COVID–19 pandemic, most of the teachers in Hungary worked between 41 to 50 hours per week (32.39%), followed by those working between 21 to 30 hours per week (26.76%) and those working from 31 to 40 hours per week (18.31%). In Poland, most of the teachers worked between 31 to 40 hours per week before the COVID–19 pandemic (23.75%), followed by those working between 21 to 30 hours and 41 to 50 hours per week (in both groups, 17.5% of teachers). In Slovakia, before the COVID–19, most of the teachers worked 31 to 40 hours per week (29.73%), followed by those working 41



to 50 hours (28.38%) and 21 to 30 hours per week (17.57%). In Czech Republic, most of the respondents worked less than 10 hours a week or between 11 to 20 hours to week (in both groups 40% of respondents; because of the small number of respondents from Czech Republic, with the highest ratio of part-time contracts, i tis not possible to compare results for Czech Republic with other 3 countries. However, for getting an overview about the increase of the working time during the COVID–19 period, also the data for Czech Republic are relevant).

During the COVID–19 pandemic, only about one quarter of teachers in all 4 countries worked the same amount of time as before the COVID–19 (20% in Czech Republic, 21.13% in Hungary, 23.75% in Poland and 24.32% in Slovakia). Only 4.23% of teachers in Hungary, 5% of teachers in Poland and 9.36% of teachers in Slovakia dedicate less time for work during the COVID–19 than before it. Most of the teachers in all 4 countries spent significantly more time by working duties during the COVID–19 period, than before it (80% in CR, 74.64% in HU, 66.25% in PL and 66.22% in SR). The increase by 6 to 10 hours was reported by the most of teachers – 30% in CR, 32.29% in HU, 23.75% in PL (in Poland, most of the teachers, 26.25%, worked 11 or more hours more during the COVID–19 period), and 27.03% in SR.

Increase in the time for working duties also influenced perception of the work-life balance. Most of the teachers reported that their work and family/personal life were in balance before the COVID–19 % period (53.6%). Almost 41.5% of teachers pointed that their work life dominates over their personal life even before the COVID. During the COVID–19 period, almost 50% of teachers reported that the balance between their work and family/personal life was getting worse, to the disadvantage of family life. It corresponds with the findings regarding the time allocation for various working activities. I tis evident that most of the teachers are performing various working activities in the time which they previously dedicated for their personal and family life. Such a situation is alarming, because prolonged exposure to excessive workload, accompanied by an unbalanced work-life balance, can have a negative impact on teachers' psychological well-being, on the experience of emotions during work (but also when spending time with family) and on overall job performance. Therefore, our research also focused on identifying the emotions that are prevalent in university teachers during different activities of paid work.

5.4. Well-being of V4 university teachers

In this sub-chapter of the publication, we provide selected results on the well-being of university teachers during the COVID–19 pandemic.

We examined university teachers' feelings only during those activities that are related to the performance of their job duties (the same 6 groups of activities as



for time allocation). In the first area (the two groups of activities that include preparation for teaching and teaching itself), positive emotions predominated. All the activities involved creative work (search in online databases, monitoring of internet portals, updating lectures, exercises, presentations, preparation of study materials, laboratory materials, practical exercises, activities) as well as direct interaction with students (online lectures, seminars, tutorials, guest lectures, individual consultations with students regarding lessons, individual consultations with students regarding their final theses), were mainly characterised by a feeling of motivation (in all the above activities more than 30% of respondents reported feeling motivated), and usefulness (always more than 20% of respondents, and in the case of activities of participating in student activities, student discussion forums, internet platforms, individual consultations with students regarding their final theses, individual consultations with students regarding lessons, the feeling of usefulness prevailed). On the other hand, for those activities that are related to lesson preparation or actual teaching but are carried out without direct interaction with students (recording of lectures, additional sound recordings), respondents reported feeling tired. This means that teachers are motivated to prepare for teaching and to creatively gather information needed for teaching (possibly they also feel useful in these activities). In the interaction itself, teachers feel mostly useful, and consequently motivated. However, recording lectures (i.e., a typical activity associated with online teaching during the pandemic) was mostly tiring for them. The table 25 shows teachers' emotions related to the activities involved in the preparation of teaching and the online teaching itself.

The second area of activities carried out by university teachers is in the field of science and research and related publishing. Positive emotions – motivated, followed by useful – prevailed again in publishing activities, and this was the case for those sub-activities that are creative in nature (study of relevant sources, materials, searching in online databases, processing of articles, studies, teaching texts, proofreading, consultations with co-authors). However, the subsequent process, which is associated with the administration of papers and publications, filling data into submission platforms, and responding to reviewers' reports, the predominant emotion is tiredness (20.5% of respondents) and work overload (20% of respondents). Also, in the case of research and science, for creative activities (monitoring and preparation of project documents, schemes, calls, grants, team consultations on projects, objectives, goals, working on the project), positive emotions (motivated and useful) are slightly predominant, but closely followed by feelings of work overload (reported by 19–21% of respondents). In the Table 26, data on feelings related to publications and research and science are included.



Preparation for teaching								
Emotions	Study of litera- ture, information sources	Search in online databases, moni- toring of internet portals	Updating lec- tures, exercises, presentations	Preparation of study materi- als, laboratory materials, practi- cal exercises, activities	Recording of lec- tures, additional sound recordings			
Disgusted	0.9	3.1	0.0	0.8	10.0			
Irritated	4.8	4.8	5.6	6.7	7.9			
Motivated	35.8	36.4	36.1	32.0	16.9			
Stressed	2.2	2.6	3.0	2.7	11.0			
Tired	17.0	19.7	12.6	15.6	20.8			
Useful	24.5	21.1	25.7	25.3	15.0			
Work overloaded	14.8	12.3	17.0	16.9	18.4			
		Teachi	ng itself					
Emotions	Preparation of tests, tasks, assignments, topics for pro- jects and term papers	Major part of online lec- tures, seminars, tutorials, guest lectures	Individual con- sultations with students regard- ing lessons	Individual consultations with students regarding their final theses	Participation in student activities, stu- dent discussion forums, internet platforms			
Disgusted	1.8	2.7	1.3	1.4	8.3			
Irritated	6.6	4.4	6.2	4.4	4.3			
Motivated	23.5	33.2	32.9	32.6	24.8			
Stressed	1.3	8.0	1.8	1.4	2.4			
Tired	21.7	10.2	9.8	8.6	15.5			
Useful	25.2	29.6	40.0	42.1	31.1			
Work overloaded	19.9	11.9	8.0	9.5	13.6			

Table 25	Emotions	of V/A	teachers	durina	teaching_relat	ed activites	(in %	3
IdDIE ZD	EINOUOUS	01 4	leachers	uunng	teaching-rela	eu activites	→ (III %C	3)

Source: own processing.

Project administration, which often takes up a large part of the time during the actual project, is perceived rather negatively by respondents. It is dominated by feelings of work overload (22.3% of respondents during administration, submission, communication with grant agencies, and 22.8% during preparation of interim and final reports, other project deliverables). The next most frequently reported emotion in project administration is tiredness (19.4% and 18.4% respectively).

It is evident that, as with teaching, positive emotions are prevalent in creative activities and direct interaction with colleagues, but feelings of work overload and tiredness are prevalent in administrative activities. This raises the question of the extent to which administrative assistance is provided to university teachers in project management by



university administrators. As the Slovakian teachers devoted the most time to research and science, it is evident that these teachers are the ones who are affected by the administrative demands of research and publication activities. The question and a possible topic for future research is why there is such a marked difference between the V4 countries, and to what extent the differences will be reduced in the future.

Table 26. Emotions of V4 university teachers related to publication activities, rsearch and science

	Publishing activities								
Emotions	Study of relevant sources, materi- als	Searching in on- line databases	Processing of ar- ticles, studies, teaching texts, proofreading	Consultations with co-authors	Administration, submission, re- view, considera- tion of comments				
Disgusted	1.3	4.0	3.1	2.3	6.8				
Irritated	3.2	3.2	2.8	2.2	10.9				
Motivated	39.9	35.4	29.6	35.5	15.0				
Stressed	4.5	4.9	4.0	1.8	7.7				
Tired	15.2	16.6	17.5	11.4	20.5				
Useful	23.3	23.8	23.3	35.0	19.1				
Work overloaded	12.6	12.1	19.7	11.8	20.0				
		Scientific and re	esearch activities						
Emotions	Monitoring and preparation of project docu- ments, schemes, calls, grants	Team consulta- tions on projects, objectives, goals	Working on the project	Administration, submission, com- munication with grant agencies	Interim and final reports, other project delivera- bles				
Disgusted	9.4	4.2	4.2	10.4	12.1				
Irritated	7.6	6.0	3.7	10.9	8.4				
Motivated			27.1	11 /	12.1				
	19.2	26.4	2/.1	11.4	12.1				
Stressed	19.2 10.8	26.4 4.6	6.1	8.1	9.7				
Stressed Tired	19.2 10.8 13.6	26.4 4.6 14.8	6.1 13.1	8.1 19.4	9.7				
Stressed Tired Useful	19.2 10.8 13.6 20.2	26.4 4.6 14.8 24.1	27.1 6.1 13.1 24.8	8.1 19.4 17.5	9.7 18.4 16.5				

Source: own processing.

The last group of activities are those related to the need to acquire new technical and communication skills (as an inevitable consequence of the COVID-19 pandemic on the educational process), technical support for teachers and other activities that cannot be classified either under teaching or under research and publication. It is both interesting and encouraging that the acquisition of new techno-communication skills was perceived positively by teachers. The prevailing emotions were motivated and useful



(25.7% and 24.3% in the case of participation in trainings, instructional webinars, consultations on new programs; 21.8% and 25.8% in the case of familiarization and study of new procedures, software (LMS MOODLE, AIS, MS Teams, Zoom, ...); and 21.2% and 26.7% in the case of testing new techniques and programs with colleagues, students). Of the negative emotions, tiredness and work overload were again the most frequent.

IT management and technical support							
Emotions	Participation instruction consultatio prog	in trainings, al webinars, ons on new rams	Familiarization and study of new procedures, software (LMS MOODLE, AIS, MS Teams, Zoom,)		Testing new techniques and programs with colleagues, students		
Disgusted	7	.7	9	9.3	C).0	
Irritated	7	'.7	8	3.0	7	'.9	
Motivated	25	5.7	2	1.8	21	.2	
Stressed	6	i.8		5.8	6	5.9	
Tired	14	1.4	15	5.1	12	9	
Useful	24	l.3	25	25.8		5.7	
Work overloaded	13	3.5	14.2		18.4		
		0	ther work duties	i			
Emotions	Online meetings, consultations	Online conferences, workshops	Assessments of qualifica- tion works, reviews, opinions	Committees, working groups	Individual communica- tion with your supervisor	Individual communica- tion with colleagues	
Disgusted	3.6	6.0	1.8	5.7	5.0	2.7	
Irritated	8.5	4,1	5.9	5.6	5.4	1.3	
Motivated	20.5	29.8	15.1	13.7	25.2	36.0	
Stressed	2.2	3.7	1.8	3.3	8.6	2.3	
Tired	21.9	18.8	25.6	25.0	11.7	10.4	
Useful	26.3	24.3	24.7	23.6	34.2	39.2	
Work overloaded	17.0	13.3	25.1	23.1	9.9	8.1	

Table 27. Emotions of V4 university teachers linked with IT management and other work duties

Source: own processing.

The group of other activities is again differentiated according to whether teachers enter into direct interaction with others (individual communication with your supervisor, individual communication with colleagues, online conferences, workshops), where positive emotions motivated and useful predominate, or perform administrative or evaluation activities (assessments of qualification works, reviews, opinions, committees, working groups), where tiredness and work overload predominate.

Table 27 shows the emotions of university teachers related to IT management activities and other work duties.



6. Conclusions, summary and future direction of research

Barnett said, a typical feature of higher education institutions in recent times is the intertwining of the research university, entrepreneurial university and bureaucratic university models (Barnett, 2010).

In such an understanding of the university, its size, quality, and significance are not determined by the number of professors employed, research projects carried out, the number of research made or the number of well-educated graduates, but by the desire to work, cooperate and maintain contacts (Rybkowski, n.d.).

Change in the structure of work organization in higher education institutions – flexible structures are created, parallel to the existing organizational structure, realizing expert opinions and reports on the order of various organizations and institutions, providing consultations, and preparing specialized research. It is difficult to develop different area: scientific, teaching, organizational as well as to combine research and leadership skills. Despite the need to combine these areas, the university should define a strategic dominant direction for the professional development of university teachers that will support them organizationally and leave freedom for self-study in other areas of development.

In the aspect of scientific work of an academic teacher (educator, researcher) is little known to the general public (the phrase: "You have so good, a lot of free time..."). A huge part of the tasks is carried out in so-called "free time" (holidays, weekends, public vacations), it is limited by specific deadlines (24/7 work system).

The issue of time allocation of university teachers in the conditions of the V4 countries has so far been developed only marginally and without cross-country comparison. Thanks to the financial support from the International Visegrad Fund and the project "DOES WELL-BEING MATTER? HIGHER EDUCATION TEACHERS DURING COVID–19 PANDEMIC" we managed to conduct a joint questionnaire survey in 4 universities (each in a different V4 country). Such a survey on time allocation (even if only limited to work duties and not all components of the day, i.e. paid work, unpaid work, leisure, and other non-productive activities) is unique in the V4 context. Given that we focused on time allocation under the conditions of the COVID–19 pandemic, when higher education and the work of university teachers underwent a radical change (from a standard and exclusively face-to-face form of teaching to hybrid or purely online teaching), we were able to obtain unique data that will be useful not only for the universities involved in the research itself, but also for further research.

The results of our research show that university teachers were significantly affected by the COVID–19 pandemic, not only in terms of time workload, but also in terms



of experienced emotions and work-life balance. Whereas before the pandemic, university teachers in the V4 countries devoted mostly from 30 to 50 hours to paid work, during the pandemic most teachers had an increase in their workload of 6 to 10 hours per week. This increase in the amount of time teachers have to devote to paid work is subsequently reflected in a worsening work-life balance (to the disadvantage of private life).

In the area of well-being, our research has shown that university teachers remain fully engaged in their work even during the COVID–19 pandemic, with positive emotions prevailing (in all activities that are creative in nature, or that focus on direct interaction with students or colleagues). However, activities of an administrative nature are burdensome and exhausting for university teachers, which is reflected in mostly negative emotions in this area.

The present monograph provides the theoretical background of time allocation and well-being of university teachers, a description of the specific method used for data collection (a modified Time Use Survey methodology, including the identification of feelings while performing activities, i.e. linking the three components of activity-time-feeling), as well as selected findings on the allocation of time and well-being of university teachers at the time of the COVID–19 pandemic.

The findings open up a number of additional questions that create scope for further collaboration between the participating universities, as well as for further exploration of both time allocation and well-being of university teachers. We are convinced that the implemented project "DOES WELL-BEING MATTER? HIGHER EDUCATION TEACHERS DURING COVID–19 PANDEMIC", the conducted research as well as this monograph create a framework for a deeper investigation of this issue and for a more detailed discussion not only by the universities and their representatives, but also by the university teachers themselves and the different actors of the decision-making sphere. Not only the project itself, but also this publication could not have been produced without the support of the International Visegrad Fund, to which we would like to express our sincere thanks.



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Wydawnictwo SIZ ul. Matejki 22/26 pok. 112 90-237 Łódź tel.: 42 635 47 91 e-mail: biuro@wydawnictwo-siz.pl